A STUDY OF THE OUTCOMES OF A TEACHER'S ATTEMPTS TO INDIVIDUALISE ASSESSMENT AND INTERVENTION IN A BUSY CLASSROOM

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ABSTRACT

To date only a limited number of studies have focused on teacher-led functional assessments in the mainstream classroom. This purpose of this study was to observe what happens when a general education teacher attempts to individualise parts of her programme to meet the unique teaching needs of certain children. The participating teacher identified eight children with behavioural and/or learning needs in her classroom. For each of the children with learning difficulties the teacher was able to formulate a function-based hypotheses and design an effective intervention after being provided with some written support. The teacher did not form a function based hypothesis for a child with behavioural difficulties. The subsequent intervention was not function based and failed to decrease the problem behaviour. In each of the eight remaining case studies the teacher required support from the researcher in order to implement, supervise, and maintain an individualised intervention.

CHAPTER 1

INTRODUCTION

Over the past thirty years New Zealand education policy has undergone important reforms in the area of Special Education. In particular, new inclusion policies have validated the rights of all New Zealand children to receive education in general educational settings. This has had a significant impact on the diversity and range of educational needs that teachers must respond to in the mainstream classroom. New Zealand's full inclusion policy raises a number of practical questions regarding how teachers are to meet the learning needs of all students.

The New Zealand Ministry of Education (2007) defines children with Special Education Needs (SEN) to include children with sensory, physical, learning, and social impairments. With the full inclusion model, teachers are the primary source of learning support for children with SEN. It is therefore important that teachers are committed to the principle of inclusion and believe that all children can achieve in the general education environment (Spedding, 2008; Wearmouth & Glynn, 2004; Westwood, 2003). However, while New Zealand teachers appear to view inclusion positively, many feel ill-equipped for their role in special education (Prochnow, Kearney, & Carroll-Lind, 2000).

National curriculum guidelines require more than the assimilation of children with SEN into mainstream classrooms. Schools are expected to identify, assess and effectively meet barriers to learning and achievement for individual children(New Zealand Ministry of Education, 2004). Support is available for children, whether in special education or mainstream classrooms, through professional advice and by providing funding for additional staffing, specialist consultation, and adaptations to

equipment or environments (New Zealand Ministry of Education, 2007). Currently this funding falls into two categories: "individually targeted resourcing for the three percent of students deemed to have high or very high needs for support, and school-based resourcing for the four to six percent of students with moderate needs" (Mitchell, 2000, p. 35). However, there is some research to suggest that there is a discrepancy between current provisions and the level of support that teachers would like (New Zealand Ministry of Education, 2005a). In one study, New Zealand primary school teachers reported that they received less than half of the support that they perceived they needed in order to achieve effective inclusion for all children (Prochnow et al., 2000).

The two most prevalent SEN in New Zealand classrooms appear to be those of children with learning difficulties and those of children with behavioural problems. Currently funding provision for children who require a high level of behavioural support is available for one percent of all New Zealand children. However prevalence rates for children with severe behavioural problems in New Zealand classrooms may be as high as five percent (Church, 1996).

Teachers frequently quote behavioural difficulties as the most stressful aspect of their job (Frazer & Moltzen, 2000). Currently, New Zealand is showing an increase in the number of children excluded due to behavioural concerns, particularly those who are of Maori or Pacific Island descent (Wearmouth, Glynn, & Berryman, 2005).

Similar discrepancies between provision and need exist when considering the funding provided for children with learning problems (Prochnow et al., 2000). To avoid the embarrassment associated with repeated failure, some of these children are engaging in a range of challenging behaviours to avoid difficult tasks (Dunlap et al.,

1993; Van Acker, Boreson, Gable, & Potterton, 2005). Traditionally, children with behavioural difficulties have been 'excluded' or 'stood down' from school. However this further reduces the child's opportunity to learn pro-social behaviour and to continue their academic progress (Van Acker et al., 2005).

Behavioural problems in school-aged children not only present at high rates but are also often precursors to long-term serious difficulties (Fox, Dunlap, & Powell, 2002). Research regarding the developmental course of childhood behavioural difficulties suggests that, if left untreated, conduct problems tend to increase in severity and intensity as the child develops. These conduct problems limit educational achievement by reducing the time spent engaged in academic learning. The research shows that, long-term conduct problems can result in severe social impairment and distress for the child and for others in their surroundings. The longer the conduct problems are left untreated the lower the success rate. Finally, intervention often places increased demands on a family's financial, time, and emotional resources (Carr, 2006; Church, 2003; Dadds, 1997; Fox et al., 2002; Hembree-Kigin & McNeil, 1995; McMahon, Wells, & Kotler, 2006).

Classification of Behaviour and Learning Difficulties Part 1: Diagnostic and Statistical Manual of Mental Disorders

Currently, the conceptualisation most widely used to classify childhood learning and behavioural difficulties is the diagnostic classification developed by the American Psychiatric Association (American Psychiatric Association, 2000b). This classification is based on a medical conceptualisation that assumes learning and behaviour problems are symptoms of an underlying disorder or dysfunction within the child. The most recent edition of this system (DSM-IV) lists three Disruptive Behaviour Disorders and four Disorders of Learning for children.

Disruptive Behaviour Disorders. This category includes Attention Deficit Hyperactivity Disorder (ADHD), Conduct Disorder (CD), and Oppositional Defiant Disorder (ODD). The essential feature of ADHD is an enduring pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than typically expected for the child's developmental age. Characteristic behaviour of CD is a repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated. With ODD a recurrent pattern of negativistic, defiant, disobedient, and hostile behaviour toward authority figures is evident. For each of the three disorders listed above the behaviours need to represent impairment, occur across different settings, and not be accounted for by any other disorder (American Psychiatric Association, 2000a).

Disorders of Learning. The term Learning Disorder includes the problems of students whose academic abilities fall substantially below that expected for their age, schooling, and level of intelligence. The learning problems must significantly interfere with academic achievement and activities of daily living that require related skills. If a sensory deficit is present, the difficulties need to be in excess of those usually associated with it. The Specific Learning Disorders listed in the DSM are Reading Disorder, Disorder of Written Expression, Mathematics Disorder, and Learning Disorder Not Otherwise Specified (American Psychiatric Association, 2000a).

Critique of the DSM categories. The DSM categories have evolved over a forty-five year period with the diagnostic categories changing over the various revisions. This complicates comparison across research samples from different time periods. There is also ongoing debate regarding the validity of the the DSM categories. Questions are being asked as to whether the three categories of disruptive

behaviour can be differentiated from each other, whether additional categories exist, and whether a more ecological approach should be considered (Hinshaw & Lee, 2003; McMahon et al., 2006). Finally, the focus is on symptoms or observed behaviours without reference to the cause or purpose of the behaviour. A child who misbehaves might do so for a number of different reasons, such as to gain attention from peers or adults or to avoid an unpleasant activity. In order to identify the type of intervention which is likely to be most effective, the teacher needs to consider both the child's behaviour and the reasons for it, that is, both behaviour and cause.

The same is true for the DSM-IV categorisation of Learning Disorders. The definitions provided do not adequately attend to the causes of the individual's learning problems. The model tends to suggest that the cause of a learning difficulty is a personal deficit located somewhere within the child. If a student fails to learn, it is because there is something wrong with the child. However children can exhibit the same delay in learning for many different reasons. Environmental factors such as the amount of instruction provided, task appropriateness, teacher behaviour, and intensity of practice are all critical to student achievement (Moore, 1998). Reading difficulties due to inappropriate instructional material and those from a lack of opportunity to practice require different interventions.

Classification of Behavioural and Learning Difficulties Part 2: Educational Classifications

In America, behavioural difficulties are included under the term *Emotional and Behavioural Disorder* (E/BD). This is defined as a disability in which emotional or behavioural responses differ significantly from those expected based on the child's age, ethnicity, or culture to the extent that educational performance is harmed (Church, 2003). Educational policy in the United Kingdom refers to *Emotional and*

Behavioural Difficulties (EBD). Behaviours characteristic of EBD include withdrawal, hyperactivity, disruptive behaviour and social immaturity (Church, 2003). In New Zealand, the term *severe behaviour difficulty* is used to describe behaviour where the safety of the child concerned, other people, or property is threatened or where the child's behaviour restricts access to normal educational settings and the child's social acceptance, sense of well-being, and academic performance is affected (O'Brien & Ryba, 2005).

The United States Department of Education refers to children with learning difficulties as having a *specific learning disability*. Criteria are met when the difficulties are unexpected for the child's age and learning experience and where there is a discrepancy between the child's intellectual and academic ability in one or more academic areas (Lyon, Fletcher, & Barnes, 2003). The United Kingdom differentiates between children with a *learning difficulty* and children who have a *learning disability*. The former refers to difficulties caused by medical, emotional or language problems and the latter to an overall intellectual or functional impairment (Westwood, 2003). In New Zealand the expressions *learning difficulties* or *specific learning difficulties* are used to refer to children who have received normal teaching in regular classrooms, yet have major, persistent problems with learning (Tunmer & Chapman, 2005).

Critique of the Educational Classifications. The educational classification of behaviour and learning difficulties includes reference to social and educational environments. However, the educational classifications still fail to provide a satisfactory definition for behavioural disorders. First, the American definition continues to use the term 'disorder', which has strong medical connotations. Moreover, as with the British and New Zealand definitions, there remains a focus on

the topography of behaviour, with a set of symptomatic behaviours indicating the presence or absence of a problem. Emphasis on behaviour and consequence as unit is still missing. Children may engage in the same behaviour for a number of different reasons. In order to develop an effective intervention we need to know the purpose or cause of the behaviour.

Second, the above terms continue to categorise children based on a within-person deficit model. The phrase "*a child who has* emotional and behavioural difficulties", suggests that the problem lies within the child and not in the environment or some other factor. Thomas & Loxley (2004) express concern that the term EBD is not only equivalent to an official category in the United Kingdom, but that the term is used extensively and unquestionably in practice, research and government policy.

As with the DSM-IV classification, the American definition of Specific Learning Disabilities fails to account for the interaction between child and environment (Spear-Swerling & Sternberg, 1996). Important contextual factors such as the type of instruction and socio-economic and cultural backgrounds are overlooked. 'Adequate assessment and intervention … (requires) examination of both the performance of the individual and of the quality of the ecological context in which learning occurs' (Moore, 1998, p. 12) and this is not occurring in this type of classification.

Third, SLD is defined by exclusion. SLDs are difficulties that are not caused by sensory impairment, not caused by cultural or socio-economic disadvantage, not caused by intellectual disability and not caused by poor instruction. An exclusion-based results in many children with learning difficulties being excluded from treatment.

Identification and Diagnosis Part 1: Behavioural Difficulties

The identification of children who need specialist interventions for their behaviour difficulties has been undertaken in a variety of ways.

Teacher nominations. The method most frequently used to identify children with behaviour problems in New Zealand classrooms is teacher referral. Teachers appear to be able to identify children with behavioural difficulties in their classroom with reasonable accuracy. This is likely due to their regular daily contact with children. Teachers' identification of children with severe behaviour difficulties does, however, identify about 33 percent more children than are identified when behaviour is assessed using a standardised measure (Church, 1996).

Diagnostic interviewing. A number of structured and semi-structured interviews have been developed to assess behavioural problems in children. One of the interviews most commonly used with parents of children with behaviour difficulties is the Diagnostic Interview Schedule for Children (DISC) (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). The DISC is highly standardised and can be administered without professional diagnostic training. However, it is too long and cumbersome to be used in the school setting (Reitman, Hummel, Franz, & Gross, 1998). Additionally, the DISC is designed to help the psychologist arrive at a DSM diagnosis and limited attention is paid to contextual factors. This limits its utility in determining the causes of the child's behaviour difficulties.

Checklist and rating scales. Checklists and rating scales are also widely used to screen for problem behaviour in schools. This form of assessment often includes normative data and is reasonably quick to complete. Four of the most commonly used behaviour rating scales are the Connors Behaviour Checklist (CBCL), the Revised Behaviour Problem Checklist (RBPC), the Conners Parent and Teacher Rating Scales,

and the Eyberg Child Behaviour Inventory (ECBI) (Reitman et al., 1998). While checklists and rating scales often assess a range of behaviours, the frequency of each behaviour and its consequences (as a unit) are not examined.

Multiple gating procedures. In order to obtain an accurate picture of a child's behavioural difficulties, practitioners need to employ multiple assessment methods. It is suggested that these include interviews and rating scales that are completed by adults relevant to the child, and direct observation of the child (McMahon et al., 2006). Multiple gating procedures use short assessment procedures at the outset, to screen for children with behavioural difficulties and diagnostic procedures for the subgroup of children identified as at risk by the initial screening. An American procedure that has been standardised is the Systematic Screening for Behaviour Disorders (SSBD) (Walker & Severson, 1992). The Screening Procedure for Antisocial Development (SPAD) is an example of a multiple gating procedure designed for use in New Zealand classrooms (Church, Tyler-Merrick, & Hayward, 2006). Three phases of assessment are used; teacher nomination, a rating scale and direct observation of the child by a trained observer. Observations involve sessions in the child's classroom; recording the amount of time the child spends on task and the child's positive and negative social interactions. Preliminary results are promising and show high levels of predictive validity for identifying children with severe behavioural difficulties. However, the pilot version is primarily a screening instrument and not a diagnostic instrument.

Identification and Diagnosis Part 2: Learning Difficulties

Non-standardised assessment. The most frequently used form of diagnostic assessment in New Zealand classrooms is non-standardised assessment such as running records and teacher-made tests (Croft, Strafford, & Mapa, 2001). New

Zealand examples include the PM Benchmarks (Nelley & Smith, 2000), Prose Reading Observation Behaviour and Evaluation of Comprehension (PROBE) (Pool, Parkin, & Parkin, 1999), and the Informal Prose Inventory (Ayrey, 2001) for running records; and for mathematics, the National Numeracy Project Diagnostic Assessment (New Zealand Ministry of Education, 2005b).

Standardised tests. Standardised tests are also used in New Zealand classrooms to assess academic achievement. Four widely used tests which have been normalised on New Zealand children are the Progressive Achievement Tests (PAT) (Reid & Elley, 1991), the Supplementary Test of Achieving in Reading (STAR) (Elley, 2003), the Burt Word Reading Test – New Zealand Revision (Gilmore, Croft, & Reid, 1981), and the Assessment Tools for Teaching and Learning (asTTle) (Brown & Hattie, 2003).

The Assessment Tools for Teaching and Learning (asTTle) is a curriculum based assessment system recently developed in New Zealand with funding from the Ministry of Education (Brown & Hattie, 2003). Teachers can use the asTTle to create paper and pencil tests designed for their own students' learning needs. Once the tests are scored, the asTTle tool generates reports that allow teachers to analyse student attainment against curriculum levels, curriculum objectives, and population norms. The asTTle CD-ROM is provided free to New Zealand schools (New Zealand Ministry of Education, 2008). However, while asTTle tests can identify skills which children have and have not acquired they provide no information regarding the probable causes of identified learning difficulties.

Curriculum-Based Measurement (CBM). CBM provides a standardised procedure for selecting, administering and scoring assessment measures, that aligns closely with those used for everyday classroom instruction and practice. This

approach is able to identify children with learning difficulties in a variety of ways. As CBM procedures are standardised, individual performance can be compared to that of a normative group. This can screen for students at risk of academic failure. CBM can also be used as a diagnostic measure by identifying the component skills children have achieved and those they have yet to learn. Finally, CBM can be used to identify children who may not be responding to either regular or specialised classroom instruction (Brown-Chidsey & Steege, 2005; Brusch & Reschly, 2007; Deno, 2003; Hosp, Hosp, & Howell, 2007). However, only American norms exist for the CBM measures so far developed.

Response to treatment. Response to treatment is the most recent approach to the diagnostic assessment of children with learning difficulties (Justice, 2006). Both the medical and educational classifications of learning difficulties require that children identified for special education provision have had an opportunity to respond to high quality instruction first. If a child fails to increase his or her rate of progress in response to an intensive evidence-based intervention, that child may then be considered eligible for special education services. One way to assess responsiveness to treatment is to combine the standardised assessment procedures of CBM with the evidence-based interventions used by the Response to Intervention approach (Brown-Chidsey & Steege, 2005; Brusch & Reschly, 2007).

Functional Assessment Procedures Part 1: Behavioural Difficulties

In 1997 functional assessment received considerable attention when it was specifically mentioned in the reauthorisation of the Individuals with Disabilities Education Act (IDEA). The Act requires that if a child's behaviour impedes the learning of their self or others then functional assessment and positive behavioural interventions are to be implemented by the school.

Functional assessment examines factors that are known to maintain the occurrence or non-occurrence of problem behaviour and learning. Based on evidence from a variety of sources, hypotheses are formed concerning the purpose or function of a child's behaviour in relation to their environment, in this case the classroom (Scott, Nelson, & Zabala, 2003). Information from a functional assessment is used to design an individually determined intervention, specific to the topography of the behaviour, the contingencies which are maintaining its use, and the environmental setting. Possible hypotheses are tested through systematic manipulation of the environment, a process termed functional analysis. The primary objective of a functional assessment is to identify and change the causes of problem behaviour or learning delay develops so that the intervention can target these causes directly.

Functional assessment developed from applied behaviour analysis. Behaviour analysts such as Carr (1977) suggested that a person might engage in a problem behaviour because it is learnt and maintained or reinforced by the events or consequences that follow it. The same behaviour may be reinforced by different stimuli for different people. Conceptualising behaviour as influenced by a variety of operants indicated that no single form of intervention would suit every individual, and therefore refocused attention onto determining the cause of behaviour (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982). Functional assessment was originally developed to identify the different reasons why some children with developmental disabilities engaged in high intensity behaviours such as aggression and self-injurious behaviours (Iwata et al., 1982). Through interventions such as functional communication training, children were taught and reinforced for using appropriate replacement behaviours that were reinforced in the same ways as the undesired behaviour.

Functional assessment research originally identified four types of motivation for behaviour: attention, escape, sensory reinforcement, and tangible reward (Carr, 1994).

Early functional assessment procedures tended to involve multiple assessment sessions in highly controlled analogue settings, such as table-top tasks in clinics (Duhon et al., 2004). These methods were then adapted for use in more natural settings such as classrooms, where there are many antecedent variables and contingency variables operating. The efficacy of functional assessment is well supported in the literature for children with severe and profound intellectual disabilities both in the clinic (Iwata et al., 1982; Stage, 2000) and in special education classrooms (e.g. Calloway & Simpson, 1999; Erbas, Tekin-Iftar, & Yucesoy, 2006; Lalli, Browder, Mace, & Brown, 1993; Mueller, Sterling-Turner, & Moore, 2005).

More recent work has included typically developing children with behaviour problems in special education classrooms (e.g. Kern, Childs, Dunlap, Clarke, & Falk, 1994; Lewis & Sugai, 1996; Umbreit, Ferro, Liaupsin, & Lane, 2007; Wright-Gallo, Higbee, Reagon, & Davey, 2006). However, the extent to which functional assessment procedures can be generalised to general education settings and for children with average intellectual ability, has yet to be established (Gresham et al., 2004; Stage, 2000). Preliminary studies indicate that this is looking promising (e.g. Ingram, Lewis-Palmer, & Sugai, 2005; Kamps, Wendland, & Culpepper, 2006; Lewis & Sugai, 1996; Maag & Larson, 2004; Mueller, Edwards, & Trahant, 2003; Newcomer & Lewis, 2004; Packenham, Shute, & Reid, 2004).

Step by step functional assessment and analysis for behaviour difficulties. Functional assessment procedures have been described by a number of authors (e.g. Cipani & Schock, 2007; O'Neill et al., 1997; Umbreit et al., 2007).

Church (2007b) has provided a step-by-step procedure for conducting a functional analysis in New Zealand classrooms. During an initial interview with an appropriate adult and the child, if they are old enough, specific behaviours of concern together with the desired alternative behaviour are identified. After selecting an undesired behaviour and more appropriate replacement behaviour, the frequency of both behaviours and the situations in which they occur help decide where and when to observe the child.

The next step involves direct observation of the child in each of the settings that are of concern. At least two hours of observation in at least two different settings is required. For both the target behaviour and the referred behaviour, observers are to record each time the behaviour occurs along with what the child is responding to, and what the immediate result is for the child. This data is then used to perform a functional analysis by answering a sequence of yes/no questions. First, has the child learnt how to perform the appropriate behaviour? If not, this indicates a learning deficit, and the child needs to be taught the required skills. Second, is the behaviour a response to aversive conditions in a specific setting? Environmental factors such as tasks that are too easy or too hard, a lack of support and/or reinforcement, and a high level of aversive behaviour by others are taken into consideration and addressed.

Once hypotheses have been generated regarding the cause of the problem behaviour, possible intervention plans are generated and discussed with the person responsible for their implementation. The intervention agent (parent or teacher) then selects the plan they are most likely to carry out consistently and accurately. The chosen intervention is then implemented, and the child's response monitored, for several days. The accuracy of the hypothesis is then reviewed and the intervention revised if necessary.

Typical findings suggested by functional assessment for behaviour difficulties. The factors most frequently identified in the literature as motivating students' inappropriate behaviour fall into two general categories. The first is positive reinforcement, examples of which include getting attention from peers or adults, sensory stimulation, or obtaining a desired object or activity. The discovery of inappropriate positive reinforcement for misbehaviour leads to the conclusion that the intervention should be one in which the child has to engage in appropriate behaviour in order to obtain these sources of reinforcement. Sometimes this will involve teaching the child the appropriate response. The second cause is avoidance of an aversive condition. Misbehaviour may work to avoid tasks which are too hard, which have resulted in failure in the past, which require skills the child has yet to learn, which involve peers, which are tedious or boring, which produce emotional or physical discomfort, and so on (Church, 2003). The discovery of contingencies in which appropriate behaviour is being avoided because it generates aversive consequences leads to the conclusion that the teacher should act to remove or reduce the aversive consequences for appropriate behaviour.

Functional Assessment Procedures Part 2: Learning Difficulties

Functional assessment research has mainly been applied to the assessment of behaviour problems, with relatively little attention paid to learning problems. Traditional methods of academic assessment often fail to provide guidance in choosing a specific intervention for children with learning problems. As with functional assessment of behavioural problems, the functional assessment of learning problems aims identify the sources of the child's learning difficulty so that an effective intervention can be selected (Duhon et al., 2004). Unlike behaviour problems, which have two main types of causes, learning difficulties can arise as a

result of many different factors. Diagnosis requires the teacher to identify the most probable cause of the learning delay.

Step by step functional assessment and analysis for learning difficulties. The development of functional procedures for children with learning difficulties is in the early stages. Preliminary analyses however, tend to describe a common set of procedures (Church, 2007b; Daly, Witt, Martens, & Dool, 1997; Hendrickson, Gable, Novak, & Peck, 1996).

Church (2007b) provides a seven step functional analysis procedure, based on the work of Hendrickson et al. (1996). The method follows a problem-solving format and aims to answer the question, "Why is this child failing to obtain the desired skills at the same rate as other children of a comparable age?

The procedure begins with an initial interview with the teacher which identifies; the academic area the child is having the greatest difficulty with, past diagnostic assessments and interventions, and relevant medical, physical or behavioural influences.

Following the interview the child's level of development is assessed with respect to the specific component skills that make up the academic area of concern.

Missing skills are then listed in order of priority, with the first two or three skills targeted for intervention.

Following this direct observation of the child is completed for at least one hour during the appropriate classroom sessions. This observation aims to measure the following: the amount of time spent practicing the target skill, the child's attitude towards practising the skill, and any behaviours that function to avoid learning or practicing the desired skill. The immediate outcomes for the child when they are working on or avoiding the learning activities are recorded. The observation data is

also used to record how often the child is practising the component skill, and their accuracy during these tasks.

Next, a series of questions are asked to analyse the information from the assessments. Is the student currently receiving instruction in the desired component skills? Does this instruction occur with enough frequency to ensure the child will reach the level of mastery of their peers in the desired skill? Is the type of practice which is being provided appropriate to build the target skills to mastery? Is the teaching of sufficient quality to ensure that the error rate on practice tasks does not exceed 15 percent and/or that it will produce improvements each session? Is the child engaged in practice tasks for at least 90 percent of the time? Is there an assessment procedure so the teacher can see the rate of progress the child is making with regard to the desired component skill? Have the mastery criteria been specified so the child can move immediately to the next skill on the list as soon as mastery of the current target skill is achieved?

Once these questions have been answered, hypotheses are generated regarding the most likely causes of the learning delay. An intervention is then designed to accelerate the progress of the child in the targeted academic skill and to test the accuracy of the hypotheses. A procedure for monitoring the child's progress and a date for reviewing the intervention need to be discussed with the teacher before the intervention is implemented.

Finally, after the child's progress has been monitored for three to four weeks, the effectiveness of the intervention is assessed and altered if needed.

Typical findings suggested by functional assessment for learning difficulties. Of the many factors that can result in learning problems in the classroom, those identified by functional assessment generally fall into two broad categories: delays due to a failure

to acquire an important prerequisite skill and delays due to a lack of motivation. When a prerequisite skill deficit is the primary cause of concern four of the most common reasons are that the child has not spent enough time practising the skill, that they have not had enough help to acquire the skill, that they have not had to do it that way before, or that it is too hard (Daly et al., 1997). There are a number of interventions to remedy each of these factors. These include providing formative feedback, providing incentives for fast and accurate performance, modifying the classroom environment, providing positive consequences for accuracy and completion, the use of mnemonics and memory strategies, Direct Instruction, and increased review and practice (Church, 2004; Mitchell, 2008; Walberg, 2003).

CHAPTER 2

LITERATURE REVIEW

Recently researchers have begun to move from functional assessment of children with developmental delays to functional assessment of children with behavioural or learning difficulties. This review aims to identify research in the area of functional assessment and intervention for children with behavioural difficulties and children with learning difficulties in mainstream classrooms. The review involved analysis of research articles on functional assessment and intervention conducted at least in part by the classroom teacher for typically developing children in general education classrooms.

Method

The search for relevant prior articles began with a search of the PsychInfo database using the terms *functional* and *assessment* (or *analysis*) and *mainstream* (or *general*) and *teacher**. The search was limited to journal articles in English. The initial search was then extended three ways. First, if the initial search indicated that an author had published two or more relevant articles, the same database was searched for all articles by that author. Second, for each of the articles selected for inclusion the 'cited by' tool was used to search for related research that was more recent. Finally, the reference lists for each of the articles selected for inclusion were searched for earlier reports. Reviews of functional assessment research were also scanned to expand the literature base (e.g. Clarke, Dunlap, & Stichter, 2002; Ervin et al., 2001; Gresham et al., 2004; Heckaman, Conroy, Fox, & Chait, 2000; Kern, Hilt, & Gresham, 2004).

The goal of the present review was to assess the extent to which teachers have participated in the functional assessment process in the mainstream classroom. Reports were included in the present review if they met the following criteria: (a) the participants were children aged between five and thirteen years who were described as having behavioural or learning problems, (b) functional assessment and/or functional analysis procedures were used to identify an intervention, (c) the study took place in a mainstream classroom, and (d) the class teacher was involved both in the functional analysis and in the delivery of the intervention.

Reports were excluded if the learners had been diagnosed with ADHD or were described as developmentally delayed, or if the study took place in a special education classroom. Reports were also excluded if the teacher did not participate in the functional assessment, or implement the subsequent intervention. Six reports were excluded on this basis. Finally reports were excluded if the teacher's participation was restricted to participation in an interview and implementing the intervention only. Ten reports (31 children) were excluded based on this condition.

Results

The author, participant/setting demographics, degree of teacher participation, and results of the 14 reports that met the inclusion criteria are summarised in Table 1. In total these studies included 23 children, 20 of whom were referred for behavioural difficulties and three who were referred for learning difficulties. Sixteen of the students were boys and seven were girls.

For the majority of the reports teacher input into the assessment phase was both limited and highly directed as can be seen from Table 1 with the researcher or other consultant planning and conducting the relevant observations. Teacher participation included involvement in an interview focusing on antecedents and possible functions

Table 1. Functional assessment of behavioural and learning difficulties by teachers in mainstream classrooms

Author(s)	Number of children	Reason for selection	Age	Functional assessment and functional analysis (FA) by	Intervention design by	Implementation of intervention by	Results
Anderson, English, & Hedrick, 2006	1 typically developing boy in day-care	Aggression and self-injurious behaviour	6	Researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teachers. Researcher formed hypothesis.	Researcher	Implemented by the teachers and monitored by the researcher	Function based intervention (differential reinforcement of behaviour) reduced problem behaviour on the first attempt.
Blair, Umbreit, & Bos, 1999	1 typically developing boy and 2 typically developing girls in day care	Off-task behaviour, non compliance, aggression	5	Researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teachers. Researcher and teacher formed hypotheses.	Researcher	Implemented by the teachers and monitored by the researcher	Function based intervention reduced problem behaviour for all three children on the first attempt. Intervention involved access to preferred activity/access to preferred activity with verbal praise.
Hendrickson, Gable, Novak, & Peck, 1996	1 typically developing boy with delays in mathematics	Difficulty with addition facts	9	Researcher and teacher chose and completed initial assessments (analogue). FA designed and analysed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Teacher (based on researcher's analysis)	Implemented and monitored by the teacher	Relating to known facts (decomposition) had the strongest effect on accuracy and fluency.
Ingram, Lewis-Palmer, & Sugai, 2005	1 typically developing boy in a mathematics classroom	Off-task behaviour	11	Researcher chose and completed initial assessments. Functional analysis designed and analysed by the researcher and implemented by the teacher. Unclear who formed hypothesis.	Researcher	Implemented by the teacher and monitored by the researcher (It is unclear who trained child in self monitoring)	Function based intervention was superior to non-function based intervention. Function based intervention reduced problem behaviour and increased on-task behaviour on the first attempt Intervention was applied to one class period only.

Table 1 continued.

Author(s)	Number of children	Reason for selection	Age	Functional assessment and functional analysis by	Intervention design by	Implementation of intervention by	Results
Kamps, Wendland, & Culpepper, 2006	1 typically developing boy and 1 typically developing girl, with low academic progress, in a charter school with direct instruction.	Non-compliance, off-task, talking out Non-compliance, off task, short attention	7 7	Researcher chose and completed initial assessments. FA designed by the researcher and implemented by the teacher with prompts. Researcher and teacher formed hypothesis.	Researcher - possibly collaborative	Implemented by the teacher and monitored by the researcher. (It is unclear who trained the children in self monitoring)	Function based intervention reduced problem behaviour and increased on-task behaviour for both children on the first attempt. Teacher was an active participant in the interview, discussions, hypothesis formulation, implementing assessment conditions and intervention.
(Lane et al., 2007)Lane, Rogers, Parks, Weisenbach, Mau, Merwin, & Bergman, 2007	1 typically developing girl	Non-participation	7	Researcher and teacher chose and completed initial assessments. FA designed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher and teacher	Teacher (Researcher helped to introduce intervention to child).	Function based intervention reduced problem behaviour and increased participation for the child on the first attempt. Intervention involved changes to both antecedents and consequences.
Lane, Weisenbach, Little, Phillips, & Wehby, 2006	1 typically developing boy	Non-engagement	7	Researcher and teacher chose and completed initial assessments. FA designed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher and teacher	Implemented by the researcher and teacher. Monitored by the researcher.	Function based intervention reduced problem behaviour and increased on-task behaviour for the child on the first attempt. Intervention involved changes to both antecedents and consequences. The teacher implemented the intervention with a high degree of integrity.

Table 1 continued.

Author(s)	Number of children	Reason for selection	Age	Functional assessment and functional analysis by	Intervention design by	Implementation of intervention by	Results
	1 typically developing girl	Task avoidance	7	Researcher and teacher chose and completed initial assessments. FA designed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher - possibly collaborative	Implemented by the researcher and teacher. Monitored by the researcher.	Function based intervention reduced problem behaviour and increased on-task behaviour for the child on the first attempt. Intervention involved changes to both antecedents and consequences. The teacher implemented the intervention with a high degree of integrity.
Lewis & Sugai, 1996	1 typically developing boy	Inappropriate peer interaction, off-task behaviours	6	Researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teacher. Researcher formed hypothesis.	Researcher	Implemented by the teacher and a peer. Monitored by the researcher.	Function based intervention reduced problem behaviour and increased on-task behaviour for the child on the first attempt. Peers enlisted to help to implement the intervention.
Maag & Larson, 2004	1 boy with EBD and 1 boy with SLD in reading and writing	Disruptive behaviours	10	Teacher (with training from researcher and using the Functional Assessment Hypotheses Formulation Protocol -FAHFP)	Teacher	Implemented and monitored by the teacher	The teacher formulated a hypothesis and used the data to form a function-based intervention with support from the FAHFP. Function based intervention reduced problem behaviour for both children on the first attempt.

Table 1 continued.

Author(s)	Number of children	Reason for selection	Age	Functional assessment and functional analysis by	Intervention design by	Implementation of intervention by	Results
Newcomer & Lewis, 2004	1 boy diagnosed as health impaired	Aggression	9	Researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher, teacher, resource teacher, and counsellor.	Playground staff (unclear who implemented social skills training). Monitored by the researcher.	Function based intervention reduced problem behaviour on the first attempt.
	1 typically developing boy	Isolated and off –task behaviours	11	Researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher and teacher.	Implemented by the teacher and monitored by the researcher. Researcher trained the child and a peer.	Function based intervention reduced problem behaviour and increased on-task behaviour for the child on the first attempt. The intervention included self-monitoring and differential reinforcement of on-task behaviour.
	1 typically developing girl	Aggression and off-task behaviours	11	Researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher and teacher.	Teacher (unclear who implemented social skills and intervention training). Monitored by the researcher.	Function based intervention (differential reinforcement of alternative behaviour) reduced problem behaviour and increased on-task behaviour for the child on the first attempt.

Table 1 continued.

Author(s)	Number of children	Reason for selection	Age	Functional assessment and functional analysis by	Intervention design by	Implementation of intervention by	Results
Packenham, Shute, & Reid, 2004	1 typically developing girl and 1 typically developing boy	Disruptive behaviour Off-task behaviour	8 9	Researcher chose and completed initial assessments. Teacher formulated hypothesis using written guidelines provided by researcher.	Teacher chose from options provided by researcher.	Implemented by the teacher and monitored by the researcher.	The teacher formulated a hypothesis and used the data to form a function-based intervention with support from the researcher. Function based intervention reduced problem behaviour for both children on the first attempt.
Patterson, 2008	1 typically developing boy	Off-task	7	Researcher and teacher chose and completed initial assessments. FA designed and implemented by the teacher. Teacher formed hypothesis.	Teacher	Implemented by the teacher and monitored by the researcher.	Function based intervention reduced problem behaviour for child on the first attempt.
	2 typically developing boys	Difficulties with reading	7	Researcher chose and completed initial assessments. FA designed analysed and implemented by the researcher and the teacher.	Researcher and teacher	Implemented by the researcher and a peer	Function based intervention increased academic performance for two children when implemented with integrity.
Sterling-Turner, Robinson, & Wilczynski, 2001	1 boy with SLD in reading and maths in a mathematics classroom	Disruptive behaviour and reduced academic performance	13	Teacher, special education teacher and researcher chose and completed initial assessments. FA designed and analysed by the researcher and implemented by the teacher. Researcher and teacher formed hypothesis.	Researcher	Teacher (unclear who implemented intervention training and who monitored intervention)	Function based intervention reduced problem behaviour and increased academic performance for child on the first attempt. The intervention included self-monitoring and differential reinforcement of on-task behaviour.

of behaviour. Interviews were conducted by the researcher and followed standard functional assessment format. In one study the teachers were paid for the time spent being interviewed (Ingram et al., 2005). In six of the case experiments the teacher and the researcher collaborated during the assessment phase. Teacher participation ranged from collecting observational data (e.g. Lane et al., 2007; Patterson, 2008; Sterling-Turner, Robinson, & Wilczynski, 2001) to helping decide upon and use appropriate diagnostic assessments for learning (e.g. Hendrickson et al., 1996).

In all of the reviewed studies the teacher participated in the functional analysis phase of the assessment. However in all cases the teacher also received professional support. The functional analysis component was designed by the researcher and then implemented in the classroom by the teacher for 20 of the 24 children. The researcher provided written guidelines rather than personal instruction for two teachers (Maag & Larson, 2004; Packenham et al., 2004). In two studies the functional analysis was designed and implemented by the researcher and the teacher together (Hendrickson et al., 1996; Patterson, 2008).

The teacher participated in the formulation of the hypothesis for the majority of the case experiments. In five case experiments the teacher was responsible for completing this phase without the researcher. For two of these teachers (involving four children) extensive guidelines were provided to direct the decision-making process (Maag & Larson, 2004; Packenham et al., 2004). The teacher of the other child was receiving post-graduate training in functional assessment procedures (Patterson, 2008). Fourteen case experiments used a collaborative approach when forming hypotheses. While the researcher formulated the hypothesis independent of the teacher for three children (Anderson, English, & Hedrick, 2006; Lane et al., 2007;

Lewis & Sugai, 1996). In two case experiments it was unclear whether the teacher participated in hypothesis development (Ingram et al., 2005; Mueller et al., 2003).

In only two reports (three case experiments) did the teacher design the intervention on their own (Maag & Larson, 2004; Patterson, 2008). The remaining studies involved varying levels of support. Three reports (4 case experiments) provided a list of options for the teacher, who independently chose the one they thought would be most successful based on functional analysis data and their classroom characteristics (Hendrickson et al., 1996; Mueller et al., 2003; Packenham et al., 2004). Interventions were designed collaboratively by the researcher or an expert with the classroom teacher in seven case studies (Lane et al., 2007; Lane, Weisenbach, Little, Phillips, & Wehby, 2006; Newcomer & Lewis, 2004; Patterson, 2008). Three case-studies were unclear as to whether there was teacher input in intervention design (Kamps et al., 2006; Lane et al., 2006) and seven case-studies relied solely on the expertise of the researcher (Anderson et al., 2006; Blair, Umbreit, & Bos, 1999; Ingram et al., 2005; Lewis & Sugai, 1996; Sterling-Turner et al., 2001).

Teachers were given most independence during the intervention implementation phase. The teacher was clearly responsible for implementing the intervention and monitoring the child's progress in three of the case studies (e.g. Hendrickson et al., 1996; Maag & Larson, 2004). For an additional eight children the teacher implemented the intervention, however its effectiveness was monitored by the researcher (Anderson et al., 2006; Blair et al., 1999; Mueller et al., 2003; Packenham et al., 2004; Patterson, 2008). One teacher introduced a peer tutoring intervention, which was monitored by the researcher (Lewis & Sugai, 1996). Seven interventions were implemented either by a team of staff members or with support from the researcher or a consultant (e.g. Lane et al., 2007; Lane et al., 2006; Newcomer &

Lewis, 2004; Patterson, 2008). The teacher monitored the effectiveness of the intervention in one collaborative study (Lane et al., 2007). The remaining five case studies failed to provide details about who trained the child in the intervention implementation and who monitored the intervention (e.g. Ingram et al., 2005; Kamps et al., 2006; Newcomer & Lewis, 2004; Sterling-Turner et al., 2001).

Functional assessment has been shown to be an effective tool that helps support children with behavioural and learning difficulties in special education and mainstream classrooms. However, in the majority of studies either the researcher has implemented the functional assessment process without teacher support (e.g. Broussard & Northup, 1997; Grandy & Peck, 1997) or teacher participation was limited to the implementation of the intervention as directed by the researcher (e.g. Kamps et al., 1995; Lane et al., 2007; McCallum, 2007; Storey, Lawry, Ashworth, Danko, & Strain, 1994; Umbreit, Lane, & Dejud, 2004; Wood, Umbreit, Liaupsin, & Gresham, 2007). An additional group of studies has investigated the ability of teachers to implement all or aspects of the functional assessment process, however these studies have concerned only teachers and children in special education programmes (Ellingson, Miltenberger, Stricker, Galensky, & Garlinghouse, 2000; Mueller et al., 2003; Watson, Ray, Sterling-Turner, & Logan, 1999; Wright-Gallo et al., 2006).

Conclusions

Recent reviews of functional assessment research in classroom settings indicate a gap in the literature in that subsequent interventions are still being undertaken most often by researchers and not teachers (Kern et al., 2004; Reid & Nelson, 2002). Reid and Nelson (2002) found that in all but one study teacher participation in developing hypotheses was at best limited. While results suggest school staff can implement

some aspects of functional assessments, the amount of training and support required is unclear (Ervin et al., 2001; Kern et al., 2004; Lane, Umbreit, & Beebe-Frankenberger, 1999; Reid & Nelson, 2002; Sasso, Conroy, Stichter, & Fox, 2001).

A number of studies were excluded from the present review because the researcher implemented the functional assessment process without teacher support (e.g. Broussard & Northup, 1997; Grandy & Peck, 1997) or teacher participation was limited to the implementation of the intervention as directed by the researcher (e.g. Kamps et al., 1995; Lane et al., 2007; McCallum, 2007; Storey et al., 1994; Umbreit et al., 2004; Wood et al., 2007). An additional group of studies investigated the ability of teachers to implement all or aspects of the functional assessment process, however these studies concerned only teachers and children in special education programmes (e.g. Ellingson et al., 2000; Mueller et al., 2003; Watson et al., 1999; Wright-Gallo et al., 2006).

The studies included in this review showed that functional assessment is an effective tool to help support children with behavioural and learning difficulties in mainstream classrooms. However, there is still not a lot of research to inform the practice of teachers working with typically developing children in mainstream classes. Although there has been a recent increase in the amount of research into functional assessment in general education settings, most research has been heavily guided by a researcher. In none of the studies reviewed did the teacher implement a complete functional assessment without support.

The majority of functional assessments conducted with children in the mainstream classroom were functional assessments of behavioural difficulties. Only three case experiments involved children with learning problems. In these three case

experiments teachers had more input into the assessment phase of the process than when compared with referrals for behaviour problems.

The two phases of the procedure with the most teacher participation, were implementing analysis conditions and implementing interventions. Both were still strongly influenced by researcher expertise. Problems exist in moving from researcher led functional assessments to those conducted largely by classroom teachers. The question of how teachers might make use of current research remains unanswered.

Teachers implemented the intervention without support for approximately half of the case studies. In only three studies did the teacher implement and monitor the intervention without assistance from the researcher. This is important as often interventions involved teaching the child a new set of skills or training a peer, and therefore required a substantial amount of time commitment. Moreover, for an intervention to be effective the child's progress needs to be monitored and adjustments made when necessary.

The research in this dissertation aims to work with a single teacher in a classroom that contains a number of children with behavioural and learning difficulties and to observe what happens when the teacher attempts to individualise parts of her programme to meet the unique teaching needs of certain children.

CHAPTER 3

GENERAL METHOD

Participants

The participants in the present study were one primary school teacher and seven children from a Year 5 and 6 class. The classroom had a total roll of 31 children and was part of a city primary school with a decile rating of three. Of the 31 students one child received Ongoing Renewable Resource (ORRS) funding, two children received Special Learning Services (SLS), and five children received group tuition in phonics using part of the school's Special Education Grant (SEG). The teacher selected for this study had eight years experience as a primary school teacher in New Zealand and English schools of both high and low decile ratings. At the time the teacher was contacted for paticipation in the study, she was enrolled in a postgraduate course on behaviour management. The course focused on using functional assessment to effectively manage challenging behaviours. As part of her study the teacher was required to complete a functional assessment of behaviour for one of the children in her classroom. The teacher valued the importance of functional assessment, and welcomed the opportunity to participate in the research and to use the method with additional children in her classroom. In addition to her classroom teaching role, the teacher received one management unit as a lead teacher for the Professional Learning Group: topic/arts/physical education.

The seven child participants included five boys and two girls, aged between 9 and 10 years at the time of screening. The classroom teacher referred them for participation because each child had come to her attention as having one or more identifiable learning and/or behavioural difficulties. The child participants were

screened for medical health problems and did not receive ORRS or SLS funding support.

Approval by the University Human Ethics Committee was granted dependent upon the following conditions: that the school, the teacher, and the children were not identified in the study, that the teacher approved all assessments and interventions, that the parents and caregivers of the children gave consent for participation, and that the children gave informed consent. A copy of the Human Ethics approval letter is provided in Appendix 1. During the application process a letter was sent to the school principal, outlining the project and requesting permission to work with the participating teacher. Both the School Board of Trustees and the school principal granted permission for the project to go ahead with the proviso that the researcher must show evidence of a recent police check and that a brief summary of the project must be written for the school newsletter. Once Human Ethics Committee approval was obtained a letter explaining the project and seeking participation was sent to the classroom teacher. The letter had a consent form attached, which the teacher returned to the researcher. The researcher also met with the teacher in person to discuss the requirements of the project. After the classroom teacher had identified children from her classroom who might benefit from individualised support, written consent letters and additional information about the project were sent to these children's caregivers. Prior to beginning the study each child was given information about it orally, and had the opportunity to have any questions answered.

The researcher visited the classroom at times prearranged with the teacher. The researcher and the teacher contacted each other using email, text messaging, and when possible personal communication during visits.

Setting

Data collection for Case Experiment 1 took place in the child's classroom. Assessment for Case Experiments 2 and 3 took place in one of five well-lit settings: the school hall, a special education workspace, the staff room, on the steps just outside the classroom, or the school library. The first four settings were generally quiet. For Case Experiment 3, the library was frequently the only space available. At times assessment occurred during a class visit amidst a moderate noise level. The researcher and the child would be seated in the computer area at the back of the library, which was out of sight of the class. The school hall was the same size as a regular classroom, and was set up with tables and desks that the children could work at.

The classroom environment was conducive to learning, with good light and a high ceiling. The classroom was tidy and very well organised. Shared resources were easily accessible to the children. Reading and maths groups were clearly displayed alongside a task-board and each group was provided with a plastic box that contained relevant activities. Instruction occurred either using a large whiteboard with the class seated at their desks or using a teaching station with the class seated on the carpet. The desks were arranged in a horseshoe shape around the outside of the classroom, with two rows of three pairs of desks in the centre. The class was bright and colourful with children's work displayed on the walls. During the study the original classroom was renovated. The standard of environment was maintained both in the temporary classroom and after returning to the renovated room. The class had established clear routines regarding entering and leaving the classroom, moving inside classroom, obtaining equipment, and so on.

The teacher had clear behavioural expectations that were largely consistent across activities and environments. The children were reminded of the behavioural expectations when the teacher introduced the task. The teacher rewarded appropriate behaviour with positive verbal comments or by giving the child points for their class team. The following techniques were used by the teacher to manage misbehaviour; reminding the class or an individual child of behavioural expectations, rewarding nearby peers for appropriate behaviour, ignoring misbehaviour, verbal reprimands, asking the child to stay behind at recess and, placing the child on Step 1 to 3 of the school wide Behaviour Management plan. This plan involved a verbal warning, leaving the room to work in the Principal's office, and finally loss of a weekly games session with the senior syndicate.

The school wide Behaviour Management Plan was clearly displayed on the wall of the classroom at a height the children could easily view. Weekly team points were also clearly visible. Team points were awarded both in the classroom and in the playground for good behaviour. The team with the highest number of points was frequently released first to breaks. Points earned also contributed towards one of four school-wide teams, and the winning team members throughout the school were rewarded once a term.

The school provided additional support for selected children through a school wide phonics programme. The programme was funded by the school's Special Education Grant and involved taking the children from the classroom to work in small groups with a trained teacher aide. Each group worked with the teacher aide for 20 minutes twice a week. The programme chosen by the school was Phonics Training (Soryl, 2006). Selection for participation involved teacher nomination followed by assessment using the measures provided in the programme. Each class teacher was

able to select up to six children. Children remained on the programme until reassessment each year.

The three classrooms that made up the senior syndicate at years five to six streamed children for writing based on ability. The classroom teacher who participated in the study taught twenty children who were writing at Level 1 of the New Zealand Curriculum Exemplars (New Zealand Ministry of Education, n.d.). Instruction included 15 minutes of whole class phonics tuition using the Phonics Training programme. The remainder of the session focused on the conventions of different genre, considering audience, language features, and structure.

The regular classroom programme included daily handwriting instruction that incorporated grammar, punctuation, and spelling rules. Handwriting was modelled in front of the class, with the children then given an opportunity to practise letter formation. The students were grouped into two ability levels, printed or linked letters.

For reading the children were divided into six groups based on their ability. Activities included group, individual, and teacher lead tuition. The teacher planned to see two reading groups a day. A running record was completed for each child at least once every term.

Functional Assessment

For the Functional assessment procedure direct and indirect measures were used to validate and clarify summary statements, to guide hypothesis formulation, and to provide information that served as a basis for intervention development. Indirect measures of behaviour and learning included a teacher interview. Direct measures included systematic observation of behaviour, reading, and writing. Behaviour was observed using the observation procedure described in Church & Tyler-Merrick (2007). Writing was observed using a timed sample of the children's ability to copy a

passage and the children's ability to write a narrative using a picture as a starter. Examples of these are given in Appendixes 2 and 3. Reading was observed using a letter discrimination test, a measure of phonemic awareness (Appendix 4), a timed decoding fluency assessment (Appendix 5), and timed running records.

When children were referred for learning difficulties, samples of the children's academic work in the relevant subject were collected. These samples included handwriting (or printing), copying assessments, written compositions, and running records. The teacher completed a weekly three-item questionnaire that asked her to reflect on the extra work that the individualised intervention(s) may have involved. A copy of the weekly reflection sheet is provided in Appendix 6.

CHAPTER 4

CASE EXPERIMENT 1: MARK

For Case Experiment 1 the classroom teacher identified two children who engaged in frequent inappropriate behaviour. Following baseline data collection, the teacher decided not to implement an intervention for one of the children. This child was then excluded from the study. The second child, Mark, was selected by the teacher because he engaged in non-compliant behaviour, was frequently off-task and disrupted the class in a number of ways. The classroom teacher was concerned that if the problem behaviours were not addressed the child would be at risk of exclusion from school.

Subject and Setting

Mark was a typically developing New Zealand European boy of 10 years of age. He was selected for participation in the present study for the reasons given above. Although Mark's academic performance indicated that he was capable of satisfactory work, he spent the greater part of classroom sessions chatting to the children near him. Mark's teacher was also concerned that he frequently refused to comply with teacher requests and became increasingly oppositional when she insisted that he do so. Mark's defiance sometimes continued until the teacher sent for the principal to remove Mark from the classroom. Mark's parents stated to the teacher that he did not like complying with requests from females both in and outside of school. Mark and his parents had asked if he could be moved to the classroom of his teacher from the previous year.

Functional Assessment

Teacher interview. The classroom teacher described off-task behaviour as any behaviour other than working on the assigned academic activity. Off-task behaviour

did not include discussing work related problems with peers. The teacher described non-compliance as refusing to follow the teacher's instruction or request within 25 seconds. Non-compliance included verbal opposition, the destruction of work, and non-engagement. The desired behaviours listed by the teacher were on-task behaviour, paying attention to the teacher when instruction was given, and complying with instructions and directions promptly. The teacher stated that Mark's failure to comply occurred throughout the school day. The teacher's initial hypothesis was that Mark failed to comply because she was female.

Direct observation. In order to observe Mark's behaviour and its consequences in class, the teacher and the researcher selected the direct observation procedure from the Antisocial Development Screen (Church & Tyler-Merrick, 2007). The classroom teacher said that she did not have time to record the observations while teaching the class. As a consequence, the observations were made by the researcher who completed a training session in the use of the observation technique prior to beginning data collection.

The observation procedure involved watching the child for 10 seconds and then recording in the next 5 seconds one aspect of the teacher's or the peers' behaviour and three aspects of the child's behaviour on a form. The social behaviour of the child, including both initiations and responses, were classified and recorded in three categories: nil, positive or neutral, and negative (Church & Tyler-Merrick, 2007). Nil social interaction was recorded when no social interaction by the observed child occurred during the 10 second interval. Positive or neutral interactions included all social interactions and attempts at social interaction other than those recorded as negative. Negative social behaviour included non-compliance, verbal abuse/swearing at someone, other negative verbal behaviour (such whining, complaining, and

demanding), inappropriate physical behaviour (pushing or hitting), dangerous physical behaviours (hitting with force, hitting with a hard object, and assaulting someone while they were on the ground), and any other antisocial behaviour which was unacceptable in the setting.

The behavioural responses of the teacher and other children to the child's interactions were coded as positive or negative. Positive responses were defined in one of three ways. Continuance was coded when the other person complied with the child's request, answered their question, or continued the conversation. Positive reaction was coded when the person responded with some form of a positive verbal or non-verbal action, like praise. The third type of positive response was a reward. Negative responses were defined in two ways. Negative verbal reactions included reprimands, warnings, or reminders of a rule. Punishment referred to actions such as planning ignoring, time out, being moved to a different desk, and so on.

Initial observations occurred in the morning, between 9 am and midday. Observations lasted for a minimum of 15 minutes. After six observation sessions the classroom teacher noticed that Mark engaged in the undesired behaviours more frequently in the afternoons, particularly in the last hour of the school day. At the teacher's request the researcher changed the observation times to between 2 pm and 3 pm. Observations were scheduled according to observer availability and child attendance at school. In an effort to remain as unobtrusive as possible, the observer was positioned either in a corner of the classroom, or off to one side of the classroom. For each session, a data sheet partitioned into 15-second intervals was used to record the occurrence of child and teacher responses, using an interval recording method. Multiple responses could be recorded in the same interval, and responses were recorded in all intervals in which they occurred; that is if a response continued to

occur across two intervals, then it was recorded in both intervals. Whenever possible during Baseline observations two children were observed at the same time, alternating from one to the other every 15 seconds.

A second observer independently recorded child and teacher responses during at least one quarter of the sessions. An agreement was defined as both observers recording the occurrence of the same behaviour in the same category in a given 10 second interval. Percentages of agreement were calculated on an interval-by-interval basis (by dividing the number of intervals with perfect agreement by the total number of intervals observed and multiplying by 100). Inter-observer agreement was 95% for on-task behaviour (range, 78% to 100%), 96% for positive social interaction (range, 90% to 100%), 94% for negative social interaction (range, 87% to 100%), and 95% for no social interaction (range, 90% to 100%).

Results of the observations. Mark presented as cheerful, social boy with an active sense of humour. He appeared well liked by his peers and seemed to have a large network of friends. Mark chatted often to those near him, laughing, and frequently making jokes. He enjoyed sports, and was often one of the last children back to class after a play break.

Mark's on-task behaviour ranged from 78% to 100% over the first six observations (in the mornings) and from 28% to 97% in the afternoon. The most common off-task behaviour was talking to nearby peers. The students generally responded to Mark by continuing the conversation, complying with his requests, answering his questions, or with other positive responses such as a smile. The daily percentage of positive interactions with peers that resulted in peer reinforcement, ranged from 88% to 100%. Over all of the Baseline sessions, negative social interactions with teachers or peers resulted in a positive response 33 to 55% of the

time and a negative response for 45 to 55% of the time. Negative social interactions included verbal abuse, negative verbal comments, and non-compliance. Typical responses by the teacher to non-compliance included reprimand, reminders, and planned ignoring. Each strategy was used with approximately the same frequency. Peer reinforcement was not observed following non-compliant behaviour.

In Session 14 and Session 17 Mark was on-task for 85% and 97% of the observation periods respectively. During these two sessions a reliever took the class, which changed a number of environmental contingencies. First, the level of noise allowed by the reliever was higher than the level of noise allowed by the regular classroom teacher. Second, the children were allowed to converse with their peers about topics unrelated to the task. Third, the academic requirements of the task were less than those expected by the classroom teacher. The children were able to choose between a simple drawing activity, a colouring activity, and a word find. Moreover, the children were given a generous time frame within which to complete the work.

Functional analysis. Mark's on-task behaviour was presented to the classroom teacher in a graph format similar to Figure 1. The classroom teacher hypothesised that off-task behaviour occurred because Mark did not respect female teachers. The researcher summarised the observation data and suggested two possible hypotheses for maintaining off-task behaviour, reinforcement from peers, and escape from tasks. The teacher did not think that escape motivated Mark's behaviour, because he did not find the classroom work difficult. Moreover, when the teacher judged Mark had not done enough work he was expected to finish the activity in the break time or for homework.

Intervention

Goals set by the classroom teacher. The teacher identified the following areas of concern regarding Mark's behaviour: "comments that are made and responses to reasonable requests" and "the way he interacts (with) and responds to the teacher". Specific behaviours identified by the teacher included negative comments about the set work, encouraging other children to behave the same way, responding rudely when spoken to, and making negative faces or comments about the teacher to other children. The teacher identified three desirable replacement behaviours: wanting Mark to "speak politely with no rude/negative comments, do what is asked without a making comments or complaining and, if unsure of the task, to ask for help".

Recording procedures. The classroom teacher recorded any times Mark engaged in the undesired behaviours and the consequences that followed. The researcher continued to observe Mark as for Baseline.

Intervention strategies selected by the classroom teacher. The classroom teacher and the school principal met with Mark and his parents to discuss the individual behaviour programme. The programme was based on the school wide discipline plan.

The following consequences were set for engaging in undesirable behaviours, in particular negative comments. First, Mark was to be asked to complete an apology letter in a special area of the neighbouring classroom. Once the letter was completed he could return to class. Second, if Mark refused to leave the classroom he was to be removed to the office area for the remainder of the day and to lose the two privileges of syndicate games time and winter sports for the week. If Mark did not go to the office as requested his parents were to come in to school to escort him to the office where he was to stay for the day. A referral to a Resource Teacher of Learning and

Behaviour (RTLB), Group Special Education (GSE), Counsellor in School, or Social Worker support services could result.

As a reward for desirable behaviour the classroom teacher was to arrange a mural painting activity for herself, Mark, and a buddy, using her weekly 20 minute release time. An art activity was chosen because art was a subject Mark enjoyed and because it provided a social opportunity for Mark and the teacher to develop a more positive relationship. The activity was conditional upon Mark not spending any time in the school office for engaging in negative verbal comments or non-compliance.

Implementation. The classroom teacher ensured Mark understood the behaviour plan, including the desired replacement behaviours and the consequences for negative verbal comments. Prior to each classroom session, the teacher caught up with Mark to remind him of the consequences and of her expectations. During the classroom session the teacher provided feedback in the form of comments regarding Mark's progress in meeting the goals of the behaviour plan. When Mark made a negative comment about the teacher or the activity the classroom teacher immediately asked him to go to the neighbouring classroom. If needed, the intervention progressed to working in the principal's office and a loss of privileges. If Mark refused to go to the principal's office the principal requested Mark's parents to come to the school and escort him to the office. The classroom teacher also moved Mark's desk so that he was seated near peers who were less likely to reinforce negative social behaviour.

Results

Figure 1 shows the rate of on-task behaviour during the morning Baseline, the afternoon Baseline, and the Intervention.

For the first phase of Baseline observations Mark was observed on two different mornings a week, over three weeks. Mark was on-task for the majority of the

observed intervals with little variation across sessions (range: 78% to 100 %). Three sessions involved independent Mathematics work (Session 3, Session 4, and Session 5), one involved a group Mathematic lesson (Session 6), one involved writing a shared story (Session 1) and one involved completing a paired art activity (Session 2). The most common off-task behaviour observed during the morning Baseline sessions was talking to nearby peers. For the majority of the sessions Mark completed a quantity of work that was acceptable to the teacher.

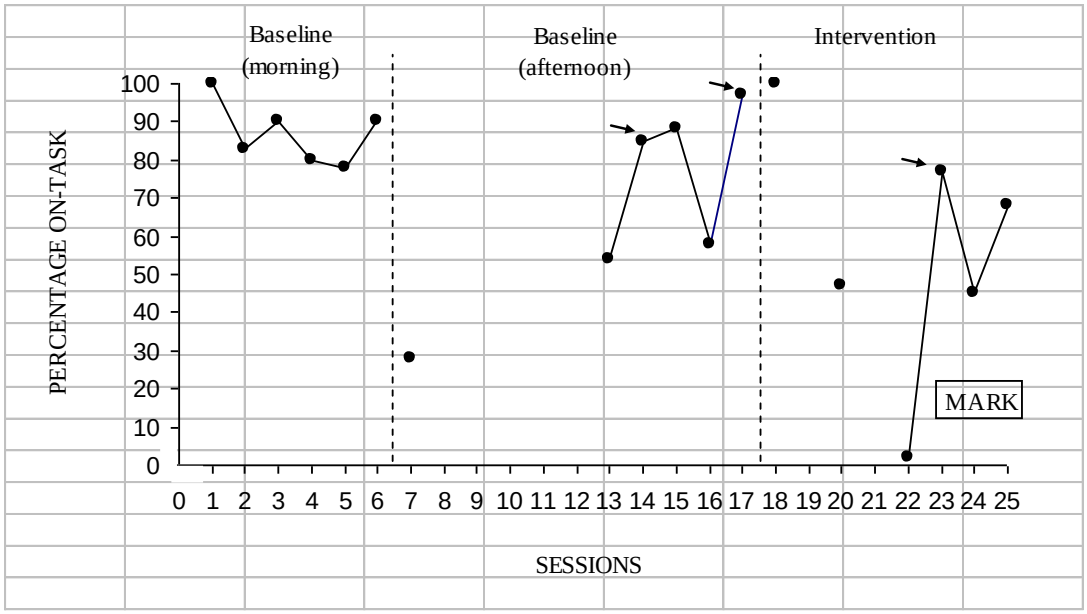

Figure 1. Percentage of intervals Mark engaged in on-task behaviour.

During the baseline observations undertaken in the afternoon the following results were obtained. In Week 4 (Session 7) Mark was on-task during 28% of the observed independent social study task. Mark completed the task to a level acceptable to the teacher. The highest level of negative social interactions across all observation occurred during this session, with Mark observed to engage in negative verbal comments during 30% of the timed intervals. Negative remarks made by Mark were reinforced by his peers at a rate of one positive response for every three comments (1:3). The teacher punished Mark using a verbal reprimand or planned

ignoring once for every two comments (1:2). Following two warnings the teacher moved the child sitting next to Mark. The second observation scheduled for this week did not take place because Mark was removed from class due to misbehaviour.

Week 5 & 6 were school holidays, on week 7 Mark was sent out of class for one observation and was absent for the other.

During Session 13, Mark was observed to be on-task for approximately half (54%) of the time while working on a social study activity with three peers. Approximately two thirds of his off-task behaviour involved positive social interaction with his peers and he was frequently rewarded by the children (88%). When asked for help by his peers Mark contributed briefly.

A relief teacher taught the class in Session 14. The expectations of the relief teacher were lower than those of the classroom teacher. The class was allowed to complete fewer activities, work at an easier level, increase their noise level, and work with peers of their choice. The last condition, along with the opportunity to earn a class game, were both contingent upon the children being on-task. Although Mark was on-task for 83% of the session, he also engaged in a high level of positive social interaction with his peers (73% of the observed intervals). Mark made negative verbal comments for approximately 15% of the timed intervals.

In Week 9 three observations were made. During Session 15, a reading lesson, Mark was on-task for 88% of the intervals. Mark was on-task for 58% of the observed intervals during independent work on a social study activity (Session 16). In Session 17 a second relief teacher taught the class. Again the academic and behavioural expectations were lower than those usually accepted in the classroom. Mark was observed to be on-task for 97% of the observations, although he engaged in a social interaction for every observed interval. The majority of these were positive

(approximately 60%), however a high percentage were negative verbal comments (40%).

Over both Baseline phases the most frequent off-task behaviour was positive social interaction. Negative social interactions accounted for approximately 9% of the total intervals observed.

The teacher introduced the intervention in Week 10. One observation (Session 18) was made that week. The children played a matching game designed to practice the days of the week in Maori. The children were allowed to talk to each other and Mark's behaviour was coded as on-task for 85% of the time. Mark's teacher reported that he "behaved all week" and he was not requested to leave the classroom.

In Week 11 (Session 20) Mark was observed gluing his weekly homework into his book and was on-task for approximately half of the time (47%). Mark was requested to leave the classroom and work in the office three times. Following the first of these he lost the privileges of syndicate activities and sport for his misbehaviour.

In Week 12 Mark was observed to be on-task during 2% of an independent mathematics task (Session 22). For most of the off-task intervals Mark rested his head on his arms, on his desk and covered his face. Prior to the observation Mark had refused to leave the classroom at the teacher's request. The teacher had sent for the principal to remove Mark from the classroom. During the observation Mark made negative comments about and did not comply with, the principal's requests. The principal left the room to contact Mark's parents. The teacher reported that Mark's mother came to the school at the principal's request, however instead of escorting Mark to the office she took him home early.

A third relief teacher taught the class for Session 23. Mark was observed to be on-task for 77% of the timed intervals. The set activities allowed a high level of peer interaction, children could choose who they worked with, and a relatively simple academic task was set. Off-task behaviour resulted when other children stood around the whiteboard and obstructed Mark's view of the activity. Mark did not begin the activity, however he contributed ideas when the class were seated back on the carpet.

In total he was requested to leave the classroom and to work in the office twice during Week 12. Mark lost the privileges of sport and syndicate activities for misbehaviour on the first day of the week. During syndicate free time Mark was to be sent to a junior classroom. However, his mother picked him up early from school to take him shopping.

In Week 13 Mark was first observed preparing his homework book when he was on task for 58% of the time (Session 24). Mark was on-task until he completed the task. Although the teacher had given an instruction for the children to read quietly when they had finished Mark rocked his chair, ripped the homework sheet out of his book, and then threw it across the room into the rubbish bin. He then screwed up scraps of paper from his desk and proceeded to also throw them to the rubbish bin.

For the second observation in Week 13 (Session 25) Mark was observed on-task during 68% of a social study task. Mark was asked to leave the classroom and work in the principal's office twice during this week.

Over the four weeks of the intervention phase the most frequent off-task behaviours were positive social interactions and no social interactions. Negative social interactions occurred for approximately 10 percent of the total intervals observed. Mark failed to earn the art activity as a reward for the duration of the

observed intervention phase. Mark lost the privileges of sport and syndicate activities for three of the four weeks.

Discussion

The purpose of this experiment was to observe whether a classroom teacher could complete a functional assessment of behaviour and use this information to design and implement an appropriate intervention. The classroom teacher was able to define both the problem behaviours and the desired replacement behaviours. In consultation with the researcher the classroom teacher was able to select an appropriate recording procedure.

The intervention introduced by the teacher was based upon the school behaviour plan and not the specific function of Mark's behaviour. It is clear in retrospect that the contingencies set out in the individual behaviour plan could never have motivated an increase in compliance or an increase in on-task behaviour. It could not increase on-task behaviour, because the punishment schedule was not contingent on off-task behaviour. It could not increase compliance, because the rate of occurrence of non-compliance was greater than the one sanction allowed per week. A second non-compliance could not be controlled by the sanction. One cannot lose access to weekly sport twice.

The intervention failed to include extinction of the problem behaviour by preventing access to reinforcement and then reinforcing the replacement behaviour. One reward, that of creating a mural, was provided on the condition that Mark behaved well for a week. The reward was very difficult to obtain, it required a high amount of exemplary behaviour to achieve and a very low amount of inappropriate behaviour to lose. Moreover, once Mark lost the reward there was no longer any positive reinforcement for the remainder of the week. The teacher believed a

behaviour chart with smaller units of reinforcement would be ineffective because Mark would find it immature, therefore there was no visible measure of the progress Mark made throughout the week towards reaching his goal.

Following the intervention the researcher discussed the results with the teacher, and suggested the teacher implement an intervention to target peer reinforcement such as the Good Behaviour Game (Tingstrom, Sterling-Turner, & Wilczynski, 2006). The researcher provided the teacher with references to articles about the method of the intervention along with information concerning the intervention's efficacy. The articles were available for public download from the Internet, but the teacher chose not to implement the Good Behaviour Game.

CHAPTER 5

CASE EXPERIMENT 2: KINGSTON, HALE, ANDREW, DAVID, JUNE AND KELLY

Six children were referred by the classroom teacher for inclusion in the present study, on the grounds that they exhibited persistent difficulties with writing. Their writing difficulties were seen to be significant in that they interfered with the children's ability to complete classroom tasks in a timely manner. Each of the children nominated for participation was writing at level 1(i) or level 1(ii) of the New Zealand Curriculum Exemplars (New Zealand Ministry of Education, n.d.). None of the children were receiving special education funding.

Subjects and Setting

The six children were given the pseudonyms Kingston, Hale, Andrew, David, June and Kelly.

Kingston was a 10-year-old Samoan boy. Kingston spoke English as a second language when he began his schooling and received Reading Recovery support in Years 2 and 3. Kingston had been one of five children included in the school wide Phonics Training programme for the past two years.

Hale was a 10-year old Tongan boy who participated in the Phonics Training programme both last year and during the current year.

Andrew was a 10-year-old New Zealand European boy who had earlier received speech and language support through Group Special Education. Andrew received Phonics Training support, both this year and last year.

David was a 10-year-old New Zealand European boy. David had received speech and language therapy through Group Special Education and communication support through the Resource Teacher of Learning and Behaviour in the first two

years of school. David was often assigned a buddy to work at his desk, to answer questions and help with spelling.

June was a 9-year-old girl of Cook Island and Maori decent. June received the Phonics Training programme in the previous school year.

Kelly was a 10-year-old New Zealand European girl. Earlier in her education Kelly had completed the Reading Recovery programme. The details of when this occurred and the length of time spent on the intervention were unclear from her school records. Kelly was also participating in the school wide Phonics Training programme. This was her second year in the programme.

Functional Assessment

Based on a recent literature review of writing assessment and intervention (Church, 2007a), the classroom teacher decided to collect additional assessment information regarding each child's handwriting fluency and composition fluency prior to forming a hypothesis. The researcher and the teacher chose to complete a timed copying task and a timed composition task for this assessment.

The researcher assisted by creating a set of six passages that were each between 25 and 41 words long and which each contained all of the letters of the alphabet. The passages are shown in Appendix 2. The researcher explained to the six children that they would have 2 minutes to copy the passage as many times as they could, after which the researcher would call "stop". The children were told that the researcher would be counting the number of letters written, however the letters had to be clearly formed to be marked as correct and score a point. Each participant was seated at a school desk. They were handed a piece of A4 lined paper and asked to write their name and the date. Next the children were handed a copy of Passage 1. They were asked to follow the passage while the researcher read the words out aloud. The

instruction to write quickly and accurately was repeated and the children were given the opportunity to ask any questions. The researcher counted down from three and the children began the assessment. At one-and-a-half minutes the children were informed of the time. With five seconds remaining the researcher counted down aloud and concluded the assessment with the instruction "pencils down". Following the assessment the researcher counted the number of legibly formed letters and divided this number by two, giving the number of letters correctly copied in one minute. A letter was classified as legible if it could be instantly recognised.

For the timed composition task the participants were provided with a picture as a story starter and given seven minutes to write a composition. The story starters are given in Appendix 3. The researcher handed out A4 lined paper and the children wrote their name and the date. Next the researcher handed out the picture. The researcher explained that the picture was to use as the starting idea for a story and that the participants would have seven minutes to write as much as they could in their story. The students were told they did not have to keep to the events in the picture but could write what they liked. Next the researcher explained that she would ask a set of questions to help prepare ideas. The participants were asked to think of the answers but not say them out aloud. The researcher asked questions such as: Who is in the picture? What are they doing? Where are they? What happened before? What might happen next? What other things can you see in the picture? The children were then given the opportunity to ask questions about the picture or the assessment. The researcher reminded the children they would have seven minutes to write their story and counted down from three seconds. The participants were told the time remaining at 4 minutes and 6 minutes. With five seconds remaining the researcher counted down out aloud, and concluded the assessment with the instruction "pencils down".

Following the assessment the researcher counted the number of legible letters and divided this number by seven. This gave the number of letters correctly written in one minute.

Assessment results

Assessment results were presented to the classroom teacher in the form of a half page summary. Underneath the results a blank form was provided with spaces to identify and then prioritise each of the component skills the child demonstrated difficulty with. This form is shown in Appendix 7. Results of the initial assessments for each of the participants are given in Table 2. Based on the assessment results and using a recent literature review as a guide (Church, 2007a), the teacher identified potential learning needs and ranked them in order of importance.

For the copying assessments, Kingston's highest score was 34 letters printed correctly per minute. This is below that expected for his age. Kingston's letter formation was legible, however he had difficulty maintaining consistent size and slope. Kingston's writing speed during compositions was 22 letters printed correctly per minute. He was able to write a narrative of a reasonable length with all of the high frequency words spelt correctly. Kingston misspelt some harder words. Examples of these spelling errors include "griver" for "driver" and "bassed" for "passed", suggesting that he had not finished learning all of the sound-letter combinations. From the assessment results Kingston's teacher identified five learning needs that were placed in the following order of importance: printing fluency, letter formation, sound-letter relationships, unusual spellings, and punctuation. It was hypothesised that Kingston's primary difficulty when writing in class was handwriting fluency; that is, he was unable to write at a higher rate because he had not spent enough time practising handwriting at speed.

Table 2. Results of initial writing fluency and composition assessments for the children in Experiment 2

	Copying Task		*Composition Task*			
Participant	Fluency (letters/min)	Quality	Punctuation	Content	Spelling	Fluency (letters/min)
Kingston	21-34	Legible – difficulty with size and staying on the line	None used	Wrote a narrative that made sense	High frequency words incorrect.	7-23
Hale	21-26	Legible – difficulty with size and slope	None used	Wrote a narrative that made sense	High frequency words correct. Difficulty with some letter sound combinations.	21-22
Andrew	22-29	Legible – difficulty with letter form	None used	Stories did not make sense	High frequency words incorrect. Phoneme recognition difficulties.	13-29
David	13-19.5	Legible – difficulty with letter form	None used	At times stories do not make sense	Phoneme recognition difficulties.	13-19.5
June	47-61		Limited	Wrote a narrative that made sense	Good	18-22
Kelly	71-79		None used	Wrote an interesting narrative	Some high frequency words incorrect. Spelling phonetically.	41-75

Hale presented as a reluctant writer who often stated that he had not performed well on the copying assessment. At times Hale would attempt to engage the researcher in unrelated conversation prior to assessment and ask to postpone starting. Hale regularly stated the tasks were difficult and that he did not know what to write about during the composition assessment. He would often look around the room rather than focus on his work. Hale was able to write 26 legible letters per minute on the copying task, which is well below the level expected for his age. Moreover, Hale had difficulty keeping the letters the same size and keeping them on the line. Fluency for the second composition task was 23 correct letters per minute and was similar to his copying fluency. Hale was able to write a composition that made sense. He had difficulty spelling high frequency words, suggesting he had yet to learn these. The classroom teacher identified potential learning needs ranked in the following order: printing fluency, letter formation, spelling high frequency words, and punctuation (full stops and capital letters). It was hypothesised that, like Kingston, Hale's primary difficulty when writing in class was handwriting speed.

Andrew wrote a maximum of 29 legible letters per minute for both the copying task and the composition task. Andrew had difficulty forming letters correctly and writing a narrative that made sense. He also had difficulty spelling high frequency words correctly and demonstrated problems with phoneme recognition. The classroom teacher ranked the following learning needs in order of priority: reading level, printing fluency, letter formation, and spelling high frequency words.

David was able to write just 13 correct letters per minute on the first copying assessment and 19.5 letters per minute on the second. Prior to the initial composition assessment David demonstrated that he did not understand the content of the picture. For the remainder of the composition assessments, the researcher checked David's

understanding during the introduction of the picture. In both assessment sessions David wrote a composition at his copying speed. His letters were legible. However they were often formed incorrectly. David was able to spell some high frequency words correctly. Although David attempted phonetic spelling, the correspondence between sounds and letters was poor. At times David's compositions were difficult to understand. The teacher placed David's learning needs in the following order of importance: reading level, printing fluency, letter formation, and spelling high frequency words. Phoneme recognition was also identified as a possible learning need, however this had not been assessed. The teacher hypothesised that David's primary difficulty when writing in class was the acquisition of initial component skills, that is, David was unable to write adequate compositions because his reading ability, and possibly his level of phoneme recognition, were insufficient for the task.

June was a talkative good-natured girl who often asked the researcher to take additional assessment sessions. During the two composition Baseline assessments however, June requested that the assessment end after approximately three minutes. She stated that she found the task difficult and that she had finished. On both occasions the researcher refocused June's attention to the picture, and June wrote two more sentences.

For the copying assessment June's scores ranged from 47 to 61 correct letters per minute. This demonstrated that June could copy at a speed consistent with that of her age level. She was able to write letters that were legible, however these were often poorly formed and hard to decipher. June's fluency on the composition task was much lower and ranged from 18 to 22 correct letters per minute. The researcher discussed with the teacher possible hypotheses for this discrepancy including motivation, knowledge of narrative structure, generating story ideas, and level of

reading skill. The teacher identified three potential learning needs and placed them in order of concern: letter formation, sound-letter relationships, and reading level. The teacher hypothesised that June's primary difficulty when writing in class was correct letter formation. June was unable to write well formed letters, as she had not spent enough time learning how to form letters correctly and practicing this skill.

Kelly printed 71 and 79 letters correctly per minute on the two copying tasks. Writing speed during the second composition was similar (75 letters printed correctly per minute). This is slightly higher than expected for Kelly's age, and almost reaches a functional level of 80 legible letters per minute (Binder, Haughton, & Bateman, 2002). Kelly had difficulty forming the letters clearly and writing letters of a correct and consistent size and slope. Kelly was able to write an interesting narrative. She was able to spell words phonetically but wrote a number of basic high frequency words incorrectly, for example writing "thay" for "they" and "nexst" for "next". Kelly did not punctuate her composition. The classroom teacher identified the following learning needs, in order of priority: letter formation, spelling high frequency words, punctuation (full stops and capital letters), and spelling irregular words. The teacher hypothesised that Kelly's primary learning need was to develop accurate letter formation.

Intervention

The classroom teacher designed an intervention to increase fluency that focused on both correct letter formation and writing speed. Fluency was chosen by the teacher as it was the writing skill of most concern for two of the children (Kingston and Hale) and although not of primary concern, fluency was a skill yet to be acquired by two children (Andrew and David). The teacher decided to include June and Kelly in the intervention also as the letter formation component could help

to address primary writing difficulties. The teacher aimed to see the six children four days per week as a small group for 10 to 15 minutes.

Recording procedures. Assessment and practice activities were completed in an exercise book, provided for each child by the teacher. The worksheets and progress graphs were glued into the workbooks.

Teaching materials. The teacher used a small whiteboard to demonstrate the correct formation of the selected letter.

Teaching procedures. Practice sessions for letter formation, or printing, involved teacher demonstration of a selected letter, student practice and immediate feedback by the teacher as she observed the children working. The intervention included an assessment day at the start of the week and four teaching and practice days. During the assessment session the teacher watched each child copy a sentence that contained all of the letters of the alphabet. The teacher marked the letters the child formed correctly and the children received two minutes free time for each correct letter. The first assessment session was used to obtain a baseline. For the remaining assessment sessions, the teacher provided feedback on any letters that had been covered in the practice sessions, but were formed inaccurately.

For the fluency section of the intervention the children were asked to copy a passage as many time as they could in five minutes. The children counted the letters copied each day and coloured in the correct number of letters on the graph. The teacher chose goals that she expected the child to reach within two to four sessions and marked these with a line on the individual graphs. When the child achieved their goal they were rewarded with five minutes free time, and received a gold star sticker on their graph.

Practice materials. Printing practice sheets were selected by the teacher from the Sunshine alphabet activity series (Pye, 1990). The passage selected by the teacher focused on the same letter that was being taught in the letter formation section, and came from the same resource series as the printing practice sheets.

The researcher monitored the children's progress twice a week using a timed copying task. Each administration of the copying assessment was the same as for Baseline. The children cycled through six different passages, to prevent rehearsal. Assessment data was collected for the first month of the intervention. The teacher continued to implement the intervention. After three months, the researcher collected follow-up data. This was achieved with the copying task and the composition task as used in Baseline.

Results

Kingston

Kingston was a quiet polite child who complied readily with requests. He worked consistently during the assessments.

As shown in Figure 2, Kingston's copying speed increased from a high of 34 correct letters per minute during Baseline to 42.5 correct letters per minute immediately following the introduction of the intervention. Kingston continued to make gains in writing fluency to a peak score of 52.5 correct letters per minute in Week 4. At follow-up Kingston had maintained the gains made in the first three weeks of the intervention (45.5 correct letters per minute). During follow up assessments his results increased slightly to 53.5 correct letters per minute, and were slightly higher those assessed in Week 4 of the intervention.

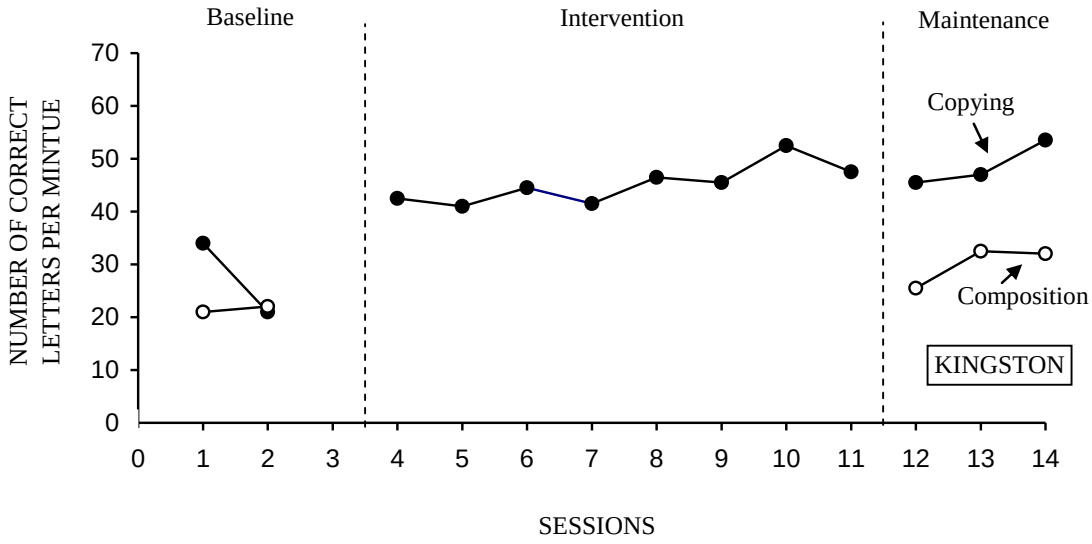

Figure 2. Number of correct letters copied per minute and number of correct letters composed per minute by Kingston.

Kingston's initial composition results at follow up were slightly higher than baseline (25.5 compared to 22 correct letters per minute). Kingston's fluency during composition increased on the second and third follow-up assessment and peaked at 32.5 correct letters per minute.

Hale

The change in Hale's writing fluency is shown in Figure 3. Following the introduction of the intervention Hale doubled his copying speed, increasing it from 26 to 52 correct letters per minute within the first week. His copying fluency continued to improve, although at a slower rate, and peaked at 60 correct words per minute in week four. At follow-up Hale maintained the gains made in copying fluency at the start of the intervention (48.5 correct words per minute). Composition fluency increased from a peak of 26 letters per minute to 60.5 letters per minute, and was at a level expected for Hale's age. At follow-up Hale remained on-task for the duration of

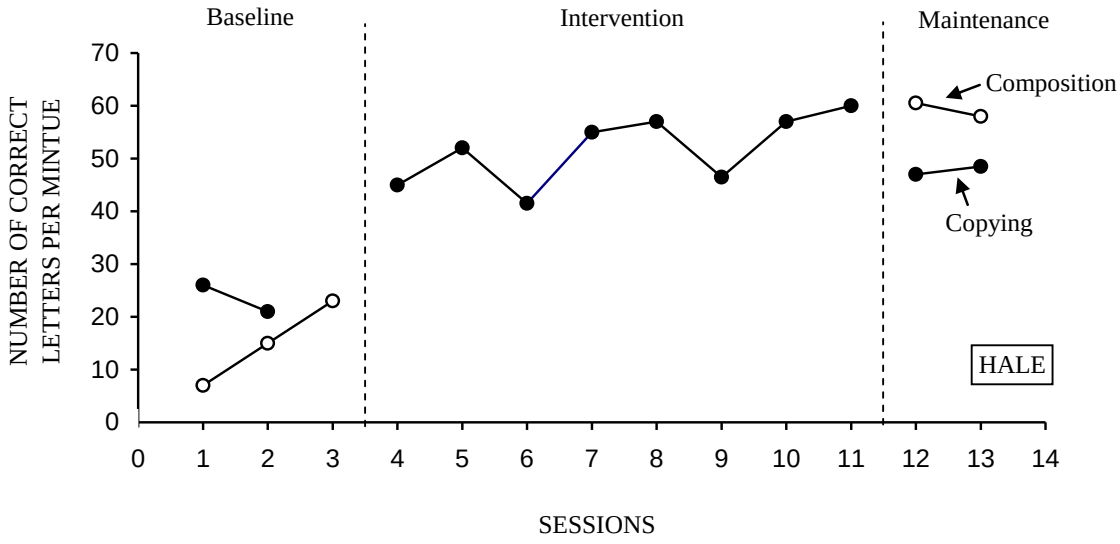

Figure 3. Number of correct letters copied per minute and number of correct letters composed per minute by Hale.

the assessments. He did not comment on his writing abilities as he had done during Baseline.

Andrew

Andrew was a cheerful boy who stated that he enjoyed the assessment sessions. While he remained focused for the duration of the copying task, Andrew tended to finish writing his compositions after a few minutes. At this time he would exclaim he did not know what else to write and would move his gaze about he classroom. The researcher would direct his attention back to the picture, and Andrew would add one or two sentences.

As can be seen from Figure 4 Andrew initially made steady gains in handwriting fluency, increasing from 29 to 42.5 correct letters per minute, in the first two weeks of the intervention. At the beginning of Week 3 Andrew was absent due to illness. On his return his fluency dropped to 35 letters per minute. Andrew's

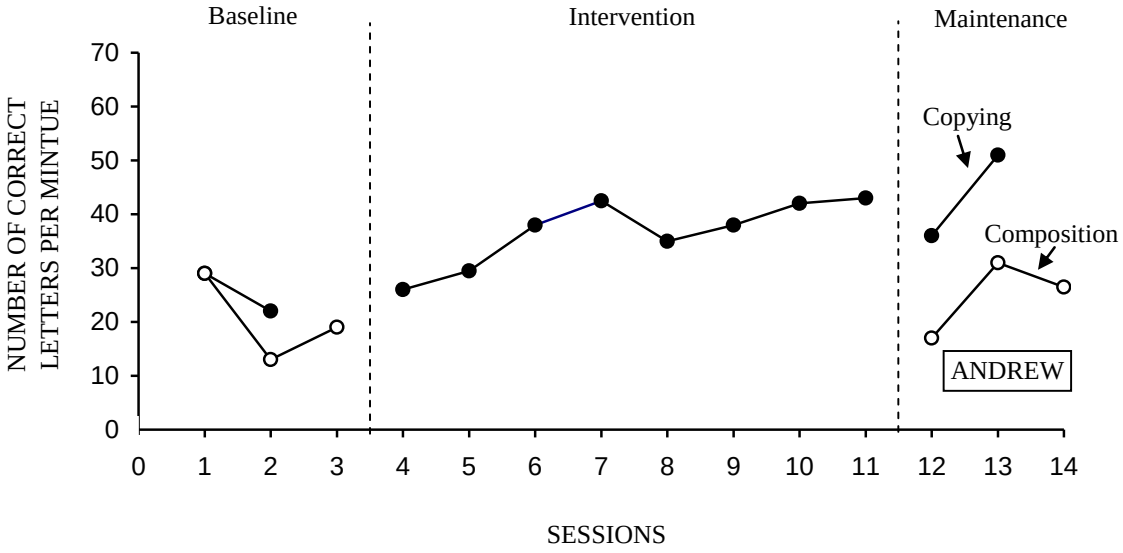

Figure 4. Number of correct letters copied per minute and number of correct letters composed per minute by Andrew.

handwriting fluency continued to increase for the remainder of the intervention and peaked at 43 correct letters per minute in Week 4. At follow up Andrew maintained some of the gains made during the intervention (36 correct letters per minute compared to 29 correct letters per minute at Baseline). For the second follow up assessment, Andrew showed gains from the fourth week of intervention, increasing from 43 to 51 correct letters per minute. Andrew's compositional writing fluency remained unchanged. He wrote at 29 correct letters per minute at Baseline and 31 correct letters at follow-up.

David

David was a polite boy who was not confident in his abilities on either the copying or composition tasks. David often made comments prior to assessment that he would write the least on either or both assessments. Often he expressed concern that the researcher would be unable to read his compositions due to his poor spelling.

During the first four weeks of the intervention David was absent on two occasions, for a total of five days.

The change in David's writing fluency is shown in Figure 5. David made

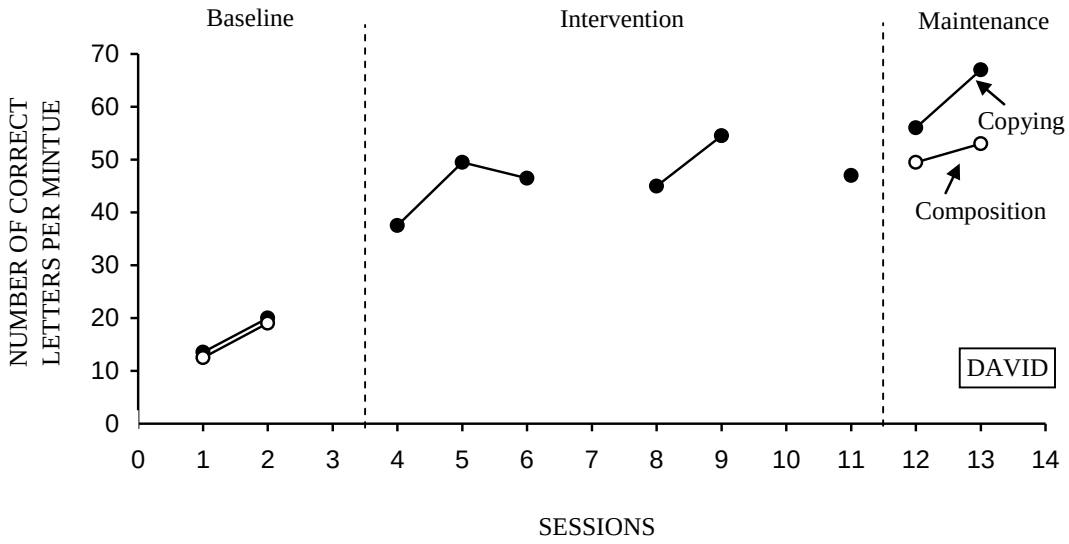

Figure 5. Number of correct letters copied per minute and number of correct letters composed per minute by David.

rapid gains moving from 19.5 correct letters per minute in Baseline to 37.5 correct letters per minute during the first week of intervention. He continued to progress in Week 1 achieving 49.5 correct words per minute. In Week 2 prior to being absent due to illness David's copying speed dropped slightly to 46.5 letters per minute. Following his illness David made further progress - increasing from 45 to 54.5 letters per minute over a week. After a second period of time away from school David's fluency dropped to 47 correct letters per minute. At follow up David continued to show improvement in his copying speed, peaking at 67 correct letters per minute. David also made large gains in his composition fluency between Baseline and follow-up, improving from 19.5 to 53 correct letters per minute.

June

As shown in Figure 6 June's results improved during the four weeks of

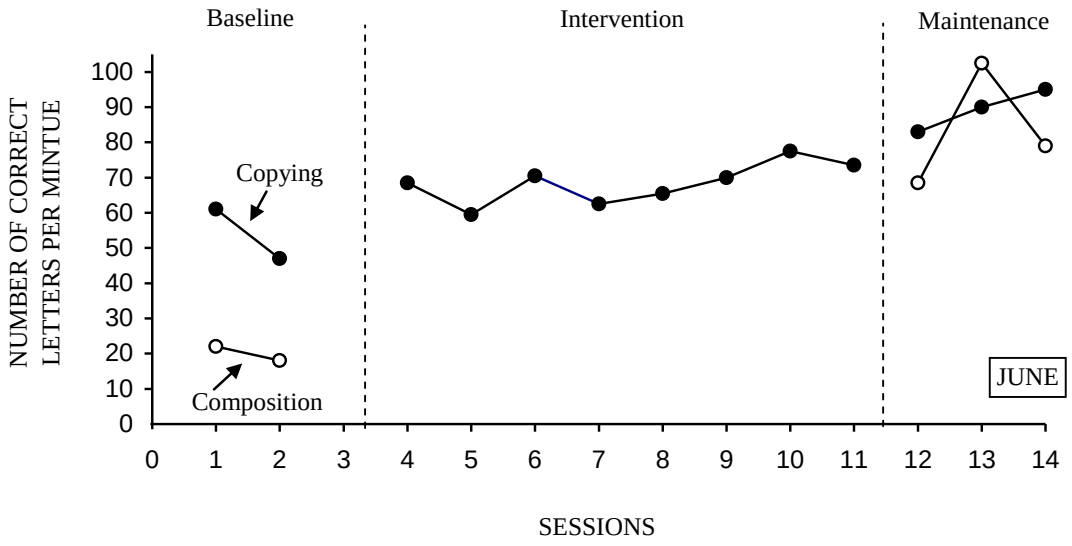

Figure 6. Number of correct letters copied per minute and number of correct letters composed per minute by June.

intervention, although her progress was somewhat erratic. In Week 4 of the intervention June was able to write 77.5 correct letters per minute. Each the copying fluency scores obtained at follow up were higher than during the intervention, indicating June had continued to make gains in copying speed. The highest score obtained during follow up was 95 correct letters per minute, an increase of 34 letters over baseline. Composition fluency also increased. June was able to write 22 correct letters per minute during Baseline, however she correctly wrote 102.5 letters during a follow up assessment. This is an increase of 79.5 letters per minute, and is over four times June's highest score during Baseline. Follow-up scores for handwriting and composition fluency reached a functional level of 80 correct letters per minute (Binder et al., 2002). During the Follow up assessments June needed to be redirected

as during Baseline, however she then wrote continuously for the remainder of the assessment.

Kelly

Kelly was quiet, cheerful girl who focused on the assessments and worked continuously for the duration of the assessment activities.

Kelly's progress is shown in Figure 7. Kelly made initial gains in copying

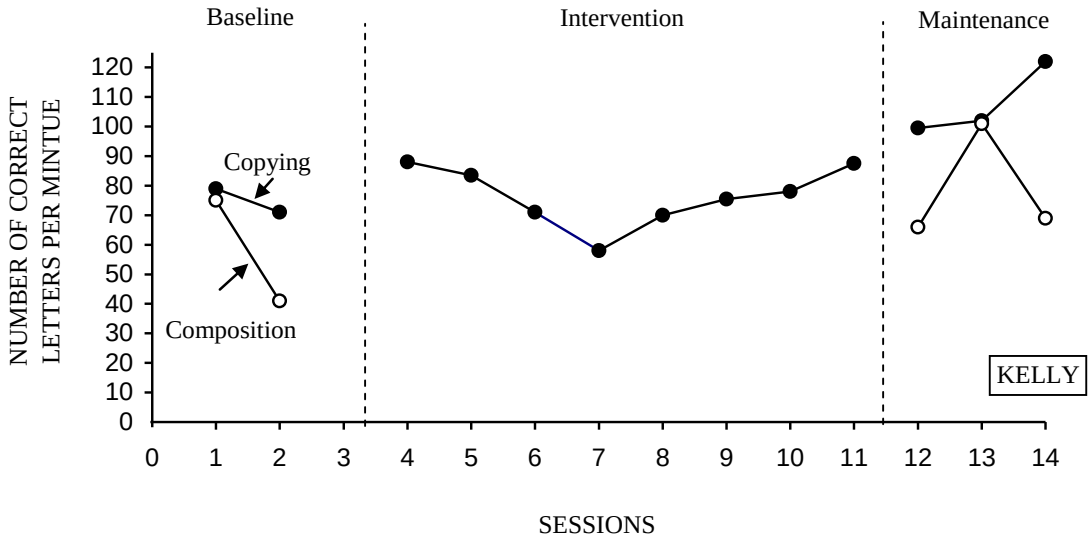

Figure 7. Number of correct letters copied per minute and number of correct letters composed per minute by Kelly.

fluency, increasing from 79 to 88 correct letters per minute in the first week of intervention. Her scores then dropped to below baseline until the final assessment in fluency, increasing from 79 to 88 correct letters per minute in the first week of intervention. Her scores then dropped to below baseline until the final assessment in week four, where she again wrote 88 correct letters per minute. The lowest score obtained by Kelly was 58 correct letters per minute in Week 4 of the intervention. At follow-up each of Kelly's handwriting fluency scores showed an increase in fluency

of between 16 to 34 correct letters per minute, when compared to her highest score during intervention. This is one and a half times faster than at Baseline.

Baseline and follow up scores for composition fluency were variable. Kelly's scores ranged from 41 to 75 at Baseline and 66 to101 at follow up. Overall results show a small increase in the number of letters written.

Teacher Reflection Sheets

The classroom teacher completed a Weekly Reflection sheet for each week of the intervention. During the initial assessment sessions the teacher noted that it was difficult finding a time for the researcher to assess the children. Arranging a session to meet with the researcher to complete a functional assessment also took time.

The intervention required considerable preparation time sourcing and duplicating letter formation and fluency tasks, and creating progress graphs. This additional work continued during the intervention. The teacher also restructured the classroom timetable so that the remainder of the class could work independently while the teacher worked with the participants. The teacher implemented the intervention for a total of 11 days over the four weeks. Factors that impeded implementation included extra curricula events such as sports, other school wide events such as a mufti parade, other classroom lessons taking precedence, and attending to the urgent needs of other students.

The classroom teacher stated that the functional assessment and intervention was acceptable and worthwhile. At a professional development meeting the teacher presented her results as an example of effective classroom practice. However, the teacher noted that support from a trained teacher aide, would have increased the effectiveness of the intervention in the classroom.

Discussion

Case Experiment 2 aimed to study the extent to which a classroom teacher could a) diagnose children's learning difficulties using a functional assessment and b) design and implement an intervention to address the identified learning needs. The functional assessment showed that two of the students (Kingston and Hale) would probably profit from an intervention designed to increase handwriting accuracy and fluency and this proved to be the case. However the teacher chose to place all six of the students who had been assessed on the intervention although two of them appeared to still need help with reading and two were already writing at age appropriate levels of fluency. The teacher argued that she did this because she wanted to maximise the use of her instruction during the group session.

Progress for the participants was generally slow. This is likely because the intervention introduced one letter a day. That is the intervention did not have enough intensity. As expected improvements in Andrew's handwriting fluency did not generalise to composition fluency. Competent expressive writing appears to follow a developmental sequence. Learning to write follows learning to read. Andrew has yet to achieve fluency in reading and possibly phoneme recognition, which are the initial component skills which will need to be mastered before he can make more progress in compositional writing.

The teacher introduced the functional assessment and subsequent intervention to the school staff, indicating acceptability of the process.

CHAPTER 6

CASE EXPERIMENT 3: ANDREW, DAVID AND JUNE

For Case Experiment 3 the teacher selected for intervention and possible remedial intervention three children who she thought were reading well below their age level. During the course of the writing study described in the preceding chapter it became clear to the teacher that two of the children, Andrew and David, required assistance with reading. The teacher chose to address the children's handwriting fluency skills first and implement a functional assessment for reading later as it would be difficult to design, establish and implement two functional assessments and subsequent interventions simultaneously.

Subjects and Setting

Andrew was a 10-year-old New Zealand European boy. The classroom teacher placed Andrew's reading ability at the 6-year old level. Earlier in his education Andrew had received speech and language support through Group Special Education. This year Andrew was identified for participation in a school-wide Phonics Training programme, described in Chapter 3. He was withdrawn from class as part of a small group work with a teacher aide for two 20-minute sessions each week.

David was a 10-year-old New Zealand European boy. The classroom teacher's records placed David's reading ability at the 6-year old level. David had received speech language therapy through Group Special Education and communication support through the Resource Teacher of Learning and Behaviour in the first two years of school. This year David participated in the Phonics Training programme, described in Chapter 3. This involved two 20-minute sessions as part of a small group with a teacher aide each week.

June was a 9-year-old girl of Cook Island and Maori decent. June was referred because she was reading two years below her expected age level. June had received support through the Phonics Training programme, described in Chapter 3, in the previous year.

Functional Assessment

A timed running record was used to screen for children reading below their age level and/or reading less than 60 words per minute. The Informal Prose Inventory (Ayrey, 2001) was chosen because the passages had been extensively trialled in New Zealand classrooms, did not have illustrations, and were previously unseen by the participants. Administration followed the procedure given in the inventory, except that the running records were timed. The number of correct words read were then totalled and divided by the time taken to read them. This provided a measure of correct words read per minute. Andrew was reading at a 6-7 year age level, with 91 percent accuracy and at a rate of 52 correct words per minute. David was reading at the level of 6-7 year old with 84 percent accuracy and at a rate of 17 correct words per minute. June read six months below her age level with 98 percent accuracy and with a fluency of 97 correct words per minute. This suggested that her instructional level was equal to or greater than her chronological age. June was therefore excluded from consideration for a remedial reading intervention.

Based on the running record results and using a recent literature review as a guide (Church, 2005), the teacher identified a set of initial component skills which needed to be assessed. The skills selected were letter discrimination, phoneme discrimination, and decoding fluency. The teacher and the researcher selected relevant assessment measures collaboratively. The researcher conducted each of the assessments at the teacher's request.

Letter discrimination was measured using the Stage 2 assessment provided by the Phonics Training programme. Stage 2 assessed the child's ability to identify initial letters. The child was shown one letter at a time, not in alphabetical order, and asked to give the sound of the letter, the name of the letter, and a word that begins with the letter.

Two measures of phoneme discrimination were used. The first was Stage 3 of the Phonics Training programme. This measured the child's ability to identify final phonemes. The child was read one or two words with a clear final sound (e.g. shed) and asked to say the last sound they could hear in the word. Secondly, phoneme discrimination was assessed using the Phonemic Segmentation Test (Williams, 2002). The Phonemic Segmentation Test assesses the ability of school-aged children to break a word into its component phonemes or sounds and is shown in Appendix 4. The test was adapted from the phonemic segmentation assessment in the Queensland Inventory of Literacy, a standardised Australian assessment. The child was presented with nine real words and seven nonsense words, each of which consisted of between two and six phonemes. The child was instructed to listen to the test word and tap a finger on the table for each of the different sounds in the word. After an initial demonstration, five practice items and corrective feedback were given. Responses were recorded on a standard recording form. One mark was scored for each correct sound reproduced by the child. The test consisted of 60 phonemes, with adequate phonemic identification shown by a score of 30 or more correct responses.

Decoding fluency was assessed using the Decoding Fluency Test (Williams, 2002). This test measures a child's ability to recognise the 45 graphemes most commonly used to visually represent the 40 English language phonemes. The Decoding Fluency Test is shown in Appendix 5. Prior to the test each child was

asked to read the set of practice items aloud as quickly as they could. Corrective feedback and modelling of fast reading was provided when needed. The graphemes were presented to the child five to a line, and were repeated in the second half of the test, in a different order. The initial grapheme was assessed for each of the words, except for the words "ox", "hay" and "boy". If the target grapheme in the presented word was pronounced correctly, the word was scored as correct. For example, coo would be scored as correct if said as "car", due to the target grapheme "c" being correctly pronounced. The child was given one minute to say as many graphemes as possible and the number of correctly read initial graphemes was counted. Reading at least 60 correct graphemes per minute is considered to be adequate decoding fluency (Church, 2005).

Assessment results. Assessment results were presented to the classroom teacher as a half page summary. Underneath the results a blank form was provided with spaces in which to identify and prioritise each of the component skills which the child demonstrated difficulty with. This form is shown in Appendix 8. Results of the initial assessments for both children are given in Table 3.

Table 3. Results of initial reading assessments for Andrew and David

Participant	*Letter recognition*	*Phonemic recognition*	*Decoding fluency*
Andrew	97%	50/60	44 per minute
David	100%	53/60	26 per minute

Andrew demonstrated adequate letter recognition and phonemic discrimination (97% and 50/60, respectively) but his decoding fluency was well below the recommended level of 60 correct graphemes per minute. David showed perfect letter recognition (100%) and good phonemic recognition (53/60) but was able to read only 26 graphemes correctly in one minute. From these results the teacher identified grapheme recognition as the next component skill that both children needed to master if their reading skills were to progress.

Intervention

The classroom teacher suggested using one of the decoding fluency interventions recommended in a recent literature review (Church, 2005). The intervention developed and tested by Nixon (2005) was chosen because the researcher had access to the materials and because the intervention had shown good results with children from similar backgrounds and with similar abilities. At the teacher's request the researcher created the resource sets, trained the participants and their buddies, and monitored the participants' progress. The teacher was to ensure the intervention was implemented in the classroom.

Recording Procedures. Timed running records and the Decoding Fluency Test were used to measure progress. Initial material for running records was selected on the basis that it had limited picture cues, had not been seen by the child before, and was able to be read by the child with 85% accuracy. The classroom teacher suggested using the Junior Journal series. The researcher tested each child on different levels of the journal until the correct level was found. The text was then divided into passages of 100 words. Running records were timed; the number of correct words read was totalled and divided by the time taken to read them, providing a measure of correct words read per minute. Each administration of the Decoding Fluency Test was the

same as for the Baseline, except that the child began on a different line on each occasion to reduce rehearsal effects.

Teaching Materials. The set of practice words was the same as that used by Nixon (2005). It consisted of a set of 60 consonant-vowel-consonant words that met three criteria. First, at least two words contained each of the targeted consonant and consonant digraphs in the initial position. In addition, at least two words contained each of the targeted vowel and vowel digraphs in the medial position. The words also showed a reasonably even distribution of consonant sounds in the terminal position. The 50 graphemes selected for practice were the most common representations of the 40 English phonemes. The practice words containing the graphemes were obtained from lists of common words and had been tested to ensure eight-year-old children understood their meaning. The 60 words were divided into two matched sets, A and B. Both sets contained at least one word with each target grapheme. These sets were both then divided in half to form a total of four subsets each containing 15 words. These lists were labelled A1, A2, B1, and B2. A list of the practice words can be found in Appendix 9.

The practice activities (snap, flashcards and reading racetracks) were designed by Nixon (2005) to be easy to understand and use, suitable for a classroom setting, and engaging for 9-year-old children.

Snap cards were printed on pale yellow A4 card, and laminated with backing paper to ensure they were not transparent. The cards measured 11.5 x 7 cm, and used Tahoma 36 point font. The same word was printed at each end of the card, so that players sitting opposite each other could read the word. One game was made containing the words from set A and one game was made for set B. Racetracks were printed on pale yellow A4 paper and laminated. Four racetracks were created, each

containing one of the sub-sets of 15 practice words. Words were positioned randomly, however care was taken that words that containing the same grapheme were not next to each other. Flashcards were printed in black ink on plain white laminated cardboard measuring 4 x 16 cm, and put on a ring. One word was presented horizontally on each card. Each child was also presented with a practice diary to record the date, the activities practised and the fastest time taken to read the flash cards and racetracks. The Children's Diary is shown in Appendix 10.

Teaching Procedures. The researcher followed the procedures described by Nixon (2005). Training of the participants and their peer partners took place in the library. Peer guided practice occurred during class time. Together, the participants read the words from Set A aloud. Children who experienced difficulty reading any word were taught the word and received corrective feedback until they could read each word accurately. If they did not know the meaning, this was explained. This process was repeated until the children could provide an explanation for each of the words. The children were then instructed in how to use the flash cards. They were shown how to place the flashcards on the table in three rows of five cards each. The peer tutor was instructed in how to use a stopwatch to measure the time taken for their participant to read the words as fast as they could. This process was demonstrated by the researcher with one of the tutees and then practiced by each pair until competency was reached. The children were also instructed in how to use the racetracks and to play the snap game.

It was explained to the children that they were to practise the three reading activities for a total of 21 minutes each day, with 7 minutes being spent on each activity. The activities could be completed in any order. A named zip-lock bag

containing a stopwatch, three practice activities and the practice diary was given to each pair.

Practice Procedures. The peer tutors were instructed to follow the above instructions for each of the practice activities with the first set of practice words. The pairs were told they needed to practise the activities every day for the upcoming weeks and fill in their diary each day. They were told their teacher would give them permission to do this every day during silent reading time. The researcher observed the pairs on the first day of the intervention to ensure they were using the games correctly.

Twice a week the researcher travelled to the school to administer the Canterbury Decoding Fluency Test and a running record as described previously. During this time the researcher also checked the practice diary to ensure that the intervention was occurring and where possible observed the children while they engaged in the activities. Children were given the next set of practice words when they were able to read the set of 15 flash cards in twelve seconds or less.

Results

Andrew

Andrew was generally focused on what was asked of him and worked hard to improve. During the Decoding Fluency assessments initially Andrew missed out words when he did not know the word and sometimes lost his place. From Week 3 of the intervention (Session 10), however, Andrew tended to go back and self-correct. Andrew also began to sound out graphemes in his reading that he did not instantly recognise.

As can be seen from Figure 8, Andrew started with Baseline pre-test scores ranging from 44 to 53 correct graphemes per minute on the Decoding Fluency Test.

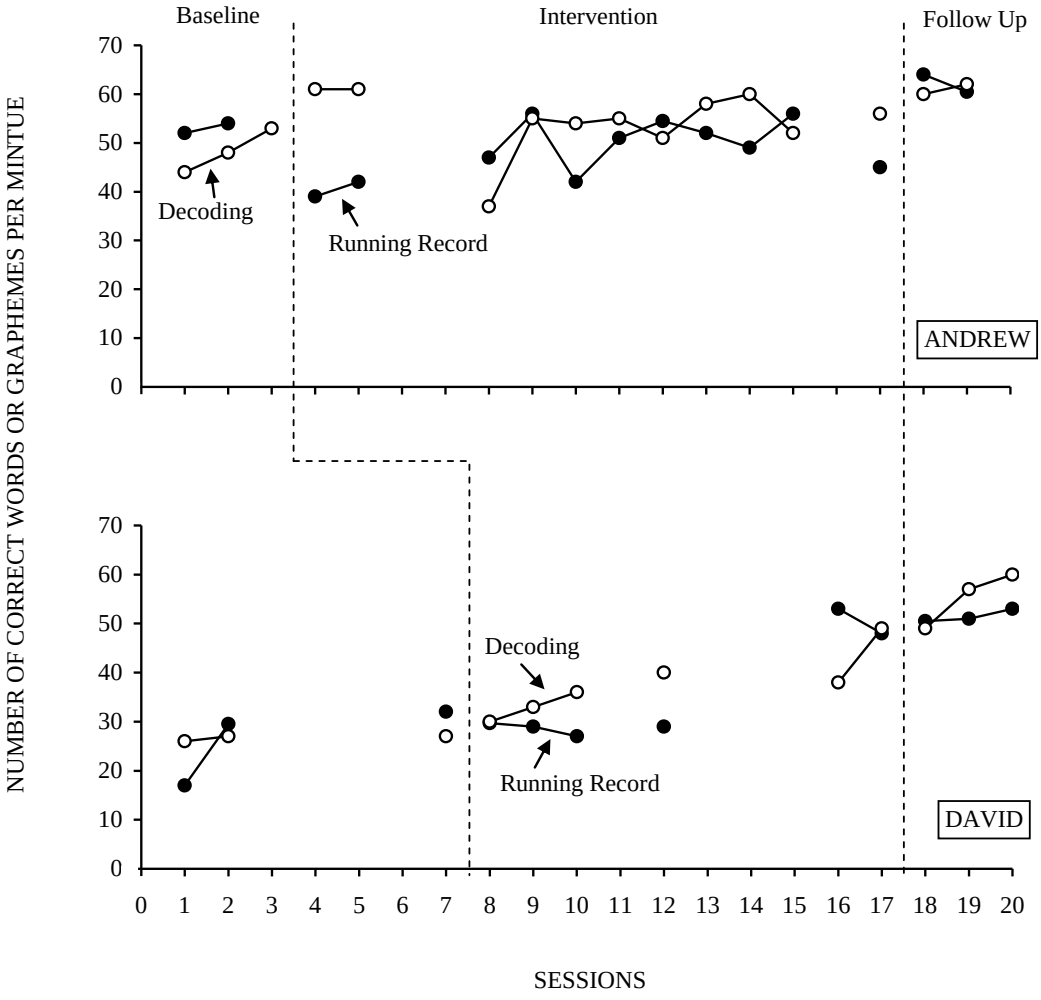

Figure 8. Number of correct words read per minute in the running record and number of correct responses per minute on the decoding fluency test by Andrew and David.

This increased to 60 correct responses per minute immediately following the introduction of the practice activities. School holidays occurred at the end of Week 2 of the intervention. Andrew's fluency rate dropped to 37 graphemes per minute after in his first week back at school after the two-week break (Session 8). During the assessment Andrew also provided a complete word for each grapheme, which meant that he read at a slower rate. This continued to occur after redirection during the practice session. At the end of the week Andrew increased the number of graphemes

correctly read to 55 per minute. Andrew was absent for two days at the start of Week 3. His fluency decreased slightly to 51 responses per minute on his first day back at school, but by the end of the following week (Session 14) Andrew had recovered to 60 correct responses per minute. Following Session 15 the researcher did not collect weekly assessment data, or monitor treatment integrity. During this time Andrew's teacher reported that Andrew practiced the activities with his peer 3-4 times a week, with steady gains over the final three assessments. By the end of the study he had improved to 69 correct graphemes per minute.

During the Baseline assessment, Andrew's reading rate (measured on the Informal Prose Inventory) ranged from 52 to 54 words per minute with 91-93 percent accuracy. This placed Andrew's instructional reading level at 6-7 years. During the intervention Andrew was assessed using Junior Journals at a 6-year reading age. During the next four weeks his reading fluency improved from 39 to 56 correct words per minute. Sessions missed due to the school holidays did not appear to affect results. Andrew was absent for the first two days of the third week due to illness. On his first day back at school (Session 8) Andrew read 42 correct words per minute. When retested at a follow-up using the 6-7 year level passages in the Informal Prose Inventory Andrew read with 95-98 percent accuracy and at a rate of 60 or more correct words per minute. When assessed at the 7-8 year level Andrew read with 94 percent accuracy, with a fluency of 61.5 correct words per minute.

Andrew's practice diary shows the three practice activities were completed a total of 13 times with his buddy over the 6 weeks the intervention was in place. The researcher completed the activities an additional three times with Andrew. Ten sessions were missed due to school events such as sports, timetable changes, the

participants forgetting to practise the activities, a relief teacher taking the class, and the classroom teacher attending to other classroom problems.

David

David was absent the week following peer tutor training. As the school holidays began after this David was reassessed after the break. Both David and his tutor were again instructed in the correct use of the practice activities at the start of the new term, prior to beginning the intervention. David was absent twice more during the intervention for a total of six days. David stated that he enjoyed the practice activities and consistently tried to improve his scores.

As can be seen from Figure 8, David started with pre-test scores ranging from 26 to 27 correct responses per minute on the Decoding Fluency Test. At the beginning of the intervention David showed a steady increase in the number of graphemes read per minute. These gains dropped to 38 following a break from school due to illness, but were regained when the intervention recommenced. Following Session 15 the researcher did not collect weekly assessment data or monitor treatment integrity. During this time David's teacher reported that he continued to practice the activities with his peer 3-4 times a week. David reached the cut-off level of 60 correct graphemes per minute in the final assessment.

During the Baseline assessment David's progress on the Informal Prose Inventory ranged from 17 to 32 words correct per minute with 84-90 percent accuracy. This result placed David's instructional reading level at below 6 years. Following the introduction of the reading activities the number of words correctly read by David stayed between 29 and 32 words per minute, however David's accuracy dropped to below 85 percent. For the third running record during intervention the researcher changed the text to a Junior Journal that was one level

easier. Following this change David's accuracy increased to 90 percent, however the number of words read correctly per minute remained between 27 and 29. When retested at a follow-up using the Informal Prose Inventory David read with 92-95 percent accuracy and at a rate of 50-53 correct words per minute.

David was absent for six days during the five-week intervention. He missed a further 14 sessions due to school events such as sports, timetable changes, forgetting to play the games, and other events. His practice diary shows the three practice activities were completed a total of ten times over the five weeks the intervention was in place.

Teacher Reflection Sheets

The classroom teacher completed weekly reflection sheets for each week of Andrew and David's interventions. The teacher noted that it was difficult to find a time to ensure the participants engaged in the practice activities on a daily basis. Although the teacher timetabled the activities into the classroom schedule, often events occurred that meant the session the activity was timetabled for did not happen or was of a shorter duration. The senior syndicate changed classrooms for some subjects, which meant the teacher could not extend the time given for the children to complete the intervention. Additional factors affecting whether the intervention took place daily included the children's independence at beginning the practice activities, the children's absence from school, the children's playground responsibilities, the teacher failing to provide instructions for relief teachers, and other school and classroom events taking precedence over reading.

The teacher also noted that space was a contributing factor to the ease of implementing the intervention. The classroom was set up in a grid arrangement. There was limited space for the children to work away from others in their pairs, and

without disrupting the class. When the weather was warm, the children were able to complete the activities on the porch outside the classroom, however in cold or wet weather it was difficult to find a suitable space. Moreover, working outside meant it was difficult for the teacher to timetable the intervention so that the participants were not missing out on classroom instruction. Finally the teacher noted that it was difficult to monitor whether the children were using the activities correctly, and that support in this area would have been useful.

Discussion

The purpose of the intervention in this case experiment was to observe whether the classroom teacher could perform a functional assessment of learning and use the data to develop a successful intervention. The teacher was able to identify the measures needed to complete a functional assessment of reading difficulties, to formulate a hypothesis and to select an evidence-based intervention. Due to time commitments the teacher asked the researcher to gather the assessment data and to create the materials for the intervention. The teacher also required support to implement the intervention, and asked the researcher to train the tutors and tutees and to monitor Andrew and David's progress.

Although the children made some gains in their reading fluency, these were less than those reported by Nixon (2005). The intervention in this case study, however, was not implemented with the intended intensity. The teacher and the participants cited a variety of individual, classroom, and school-wide factors that interfered with the daily implementation of the intervention.

CHAPTER 7

DISCUSSION

The research described in this dissertation aimed to observe what happens when a primary school teacher attempts to individualise parts of the regular classroom programme to meet the individual teaching needs of certain children. In particular the study was concerned with identifying any supports which +teachers may need in order to effectively implement a functional assessment and a function-based intervention for children with learning or behavioural difficulties. The results of the three case experiments are summarised in Table 4, and showed that the classroom teacher had the knowledge and skills to successfully design a functional assessment and relevant intervention for learning difficulties with limited professional guidance. However, in spite of prior masters level training the teacher had difficulty forming a hypothesis regarding the causes of particular behaviour problems, and hence had difficulty designing a function based intervention for a particular behaviour.

Case Experiment 1. The teacher decided to complete a functional assessment of the child's behaviour, however she neither formed a function-based hypothesis nor designed a function-based intervention. Instead she selected an intervention based on the school's standard behaviour management procedures she had used previously. There are a number of influences that are likely to have affected the teacher's ability to successfully complete the functional assessment.

Previous research has shown that despite functional assessment training teachers often resort to interventions that are standard within their school or school system (Scott, Liaupsin, Nelson, & McIntyre, 2005; Van Acker et al., 2005). In addition, despite prior training in functional assessment and behavioural intervention, the teacher discounted one well-researched method as unsuitable because a star chart

Table 4. *Summary of findings from Case Experiments 1 to 3*

Case	*Number of children*	*Reason for selection*	*Functional assessment and analysis by*	*Intervention design by*	*Implementation of intervention by*	*Results*
1	1 typically developing boy	Non-compliance & Negative verbal comments	The researcher conducted Baseline observations.	The teacher designed the intervention and created the necessary resources.	The teacher implemented the intervention. The researcher monitored the intervention's progress.	Non-function based intervention (stepwise procedure with removal of privileges) showed no reduction in problem behaviour over three weeks
2	4 typically developing boys and 2 typically developing girls	Writing at a level below expected of peers	The teacher decided on the data to be collected, analysed the data with the support of a literature review, prioritised the children's learning needs, and formed a hypothesis for the most urgent need. The researcher provided a literature review, sourced additional diagnostic assessments at the teacher's request, collected assessment data, and presented this as a summary for the teacher.	The teacher used designed the intervention and created the teaching materials and some monitoring materials.	The teacher implemented the intervention and monitored the children's copying fluency. The researcher monitored copying and composition fluency.	Function based intervention increased copying speed and increased composition length for four of six children on the first attempt
3	2 typically developing boys	Reading at a level below expected for peers	The teacher decided on the data to be collected, analysed the data with the support of a literature review, prioritised the children's learning needs, and formed a hypothesis for the most urgent need. The researcher provided a literature review, sourced additional diagnostic assessments at the teacher's request, collected assessment data, and presented this as a summary for the teacher.	The teacher selected the intervention from a literature review provided by the researcher. The researcher sourced and created the teaching and monitoring materials.	The researcher introduced the intervention and monitored the children's progress. Child peers implemented the intervention.	Function based intervention increased decoding fluency speed and increased the reading age of two children on the first attempt

was considered too immature for the child. The teacher did not consider selecting a more age appropriate version of the intervention.

Another factor is that the training undertaken by the teacher in the present study had occurred over a year previously and that the researcher provided fewer directives than given in previous research. The teacher did not have time to collect the assessment data herself in the classroom, which may also have influenced her decision. Finally, reinforcement outside of the teacher's control, such as the child's parents taking him shopping when he missed out on sport, affected the success of the intervention.

Case Experiment 2. In the second case experiment the teacher had the skills and knowledge to complete a functional assessment of learning and to design a successful function based intervention. Based on the findings of previous research (e.g. Patterson, 2008) it was anticipated that the teacher might have problems implementing the functional assessment procedure. To offset this the teacher was provided with prompts that helped to guide the process, without giving her an immediate solution. Written guidelines, in place of personal collaboration, provided sufficient professional support. The teacher struggled however, to find the time to complete the assessments and monitor the intervention. In the present study it is unlikely that the functional assessment and monitoring of the assessment would have proceeded if the researcher had not collected the assessment data. While the researcher monitored the children's writing fluency progress and reported the findings to the teacher, the teacher chose to continue to implement the intervention as originally designed, introducing only three or four new letters a week. Although the children's handwriting fluency increased, the low intensity of the intervention meant that only a slow rate of improvement occurred. The researcher also notified the

classroom teacher of the children's progress and emphasised when the children had reached a fluency level at or better than that of their peers. Twelve weeks later however, all of the children remained on the intervention.

Case Experiment 3. The main difficulty with Case Experiment 3 was one of time management, rather than of skill or knowledge. As in Case Experiment 2, the teacher demonstrated the ability to successfully analyse data, form a hypothesis, and choose an effective intervention. However, she was unable to complete the assessment or implement and monitor the intervention without support, as she did not have sufficient time to do so. The researcher's role was one of an assistant, collecting assessment data, sourcing the intervention, creating resources, and training the children in the intervention procedure. The teacher had difficulty finding time to ensure the intervention was implemented with integrity and with sufficient intensity. Key factors affecting the teacher's ability to effectively monitor the intervention included timetabling problems, school wide activities, and finding a suitable space for the children to work.

Individualisation in Mainstream Classrooms

Although a large body of research suggests that functional assessment is an effective procedure for developing interventions for children with behavioural difficulties and children with learning difficulties a number of key considerations affect whether or not it can be practically adapted for use by teachers in the mainstream classroom.

Knowledge required by teachers to implement a functional assessment

Functional assessment is a professional procedure that requires teachers to have specific skills and knowledge. In order to effectively implement an functional assessment teachers need to know: how to identify children with behavioural

difficulties and learning difficulties within their classroom; how to research, select, and interpret effective assessments; the potential causes of the difficulty; how to research, design, and evaluate appropriate interventions, and lastly how to implement the intervention with integrity within their classroom.

Can teachers reliably identify children with behaviour and learning needs? The results of the present study are consistent with previous research as reviewed in Chapter 2 (e.g. Lane et al., 2006; Lewis & Sugai, 1996; Packenham et al., 2004). In these studies the teachers were able to accurately identify children with behavioural difficulties in their classrooms. This suggests that teachers are able to identify children with behavioural difficulties with reasonable accuracy. The main difficulty seems to be that teachers sometimes perceive a child's behaviour to be antisocial even when it is a reaction to environmental factors or is actually at a level consistent with and no more frequent than that of their peers (e.g. Patterson, 2008). However, research by Church, Tyler-Merrick, & Hayward (2006) suggests that this occurs in less than eight per cent of referrals.

Teachers are also reasonably adept at identifying learning problems (e.g. Hendrickson et al., 1996; Patterson, 2008). In the present study the teacher correctly referred six children who were writing at a level well below that of their peers. In Case Experiment 2 the classroom teacher referred 3 children for reading problems. The third child was excluded from the functional assessment because her reading difficulty was less severe than originally suspected. It is possible that the nature of a teacher's job, and the frequency that teachers assess and work alongside the children in their classroom, increases their ability to identify children who have learning problems.

Do teachers have the skill and knowledge to complete a functional assessment? Neither of the reviewed studies nor the present study demonstrate that teachers can independently perform a functional analysis of behaviour (e.g. Blair et al., 1999; Lane et al., 2006; Newcomer & Lewis, 2004). Teachers appear to have difficulty describing problem behaviour in terms of the purpose it serves. In all of the studies reviewed in Chapter 2 the investigators provided support for the classroom teacher in the form of professional collaboration, prescriptive written guidelines, or recent intensive training. In Case Experiment 1 the classroom teacher received little direct support and failed to form an accurate hypothesis regarding the function of the child's behaviour, which was to obtain peer attention and/or to escape classroom activities. The researcher assisted the teacher with time management through completing the observations and summarising the observation findings. The teacher chose the assessment measures and formulated a hypothesis independently. Following the Baseline assessments the researcher provided the teacher with the percentage of on task behaviour and suggested two hypothesises. The function of the child's behaviour may have been clearer for the teacher had the researcher supported the hypotheses with quantitative data from the observations.

Teachers also require professional support when implementing a functional assessment for a child with learning difficulties. Many teachers require support in choosing the assessment methods, collecting the assessment data, and analysing the information in terms of possible solutions (Hendrickson et al., 1996; Patterson, 2008). Both of the reviewed studies used a collaborative approach during the functional assessment of learning, however the researcher in each designed and completed the functional analysis. The teacher contributed through suggesting assessments which were adapted by the researcher and also helped to implement the assessments

(Hendrickson et al., 1996). It is unclear who implemented the assessments in the second study, although it appears the researcher conducted at least half (Patterson, 2008). The present study was also collaborative, however the level of support was less intensive. It used guidelines similar to, yet less prescriptive than, three of the reviewed articles on behaviour (e.g. Kamps et al., 2006; Maag & Larson, 2004; Packenham et al., 2004). The researcher provided the teacher with a short literature review as a general overview to help guide decision-making. The results for the case experiments were presented to the teacher in a manner consistent with the layout of the literature review. The teacher chose the assessment methods, interpreted the assessment results, and formulated function-based hypotheses independently.

Do teachers have the skills and knowledge to design an effective function-based intervention? Of the studies reviewed in Chapter 2 only two teachers independently designed an intervention for a child with behaviour difficulties (e.g. Maag & Larson, 2004; Patterson, 2008) and none independently designed an intervention for a child with learning difficulties. The researcher designed the intervention in eleven of the case studies. For four of which the teacher chose a suitable intervention from the options provided by the researcher (e.g. Hendrickson et al., 1996; Mueller et al., 2003; Packenham et al., 2004). Of the remaining studies seven interventions were designed collaboratively and three did not specify whether the design was solely by the researcher or if it involved some level of teacher input.

The intervention designed in Case Experiment 1 mainly focused on the consequences for problem behaviour. Components of the intervention to make the behaviour irrelevant such as changing the environment, or that made the behaviour inefficient through reducing the rate of reinforcement of the problem behaviour were not sufficiently addressed. The intervention also failed to include extinction of the

problem behaviour by neither preventing access to reinforcement nor reinforcing replacement behaviour (O'Neill et al., 1997). To avoid excessive focus on consequences O'Neill et al. (1997) suggest that intervention design should be addressed in the following sequence: identifying the more distant setting events and any changes that can be made to these, identifying changes to the immediate antecedent events, identifying strategies for teaching and promoting the desired behaviours, and focusing on strategies to be used as a consequence for inappropriate behaviour. The researcher could have provided the teacher with form to guide this process such as used by O'Neil et al. (1997, p. 75) so that she was made aware of the different directions her intervention could take. This would have reduced the exclusive focus on consequences for antisocial behaviour.

A literature review of efficacious interventions was provided for the teacher because it was anticipated that the teacher may have problems formulating an intervention (e.g. Patterson, 2008). Given written suggestions to choose from, the teacher in the present study was able to design an intervention for six children with writing difficulties and to select an intervention for two children with reading difficulties.

In Case Experiment 2 the writing intervention was primarily designed to meet the hypothesis developed for two of the children. The teacher chose to incorporate four additional children into the group, hoping they would benefit from the intervention. The teacher was aware, however, that copying fluency was not the primary learning need of these additional children.

Can teachers implement and maintain individualised interventions? Teachers need to understand that for an intervention to be effective it needs to be implemented as it was designed. The nature of a teacher's job means they are continually striving

to individualise their programme and introduce material in a creative and challenging manner. Teachers need to be aware however, that with regards to special education, the intervention needs to be implemented in the stated manner and with the stated intensity. A teacher is unlikely to alter a medical intervention such as a course of antibiotics by reducing the dose; the same practice needs to be applied to interventions for children with behavioural difficulties and learning difficulties.

When teachers try to introduce research based practice into busy classrooms they tend to adapt and modify them. The extent to which an intervention is implemented in the same way it was originally designed is termed "treatment integrity" or "treatment fidelity" (Lane, Bocain, MacMillan, Donald, & Gresham, 2004). At present is not clear from the literature whether teachers can implement function-based interventions with reliability and appropriate intensity (e.g. McCallum, 2007; Robinson, Raethel, & Swanton, 1979).

Traditional efforts to change educational practice have relied on the theory that a teacher will utilise a practice if it is shown to be effective (Sashkin & Egermeier, 1993). However, this may not be sufficient to encourage the adoption of an idea (e.g. Henderson, 1982; Witt, Noell, LaFleur, & Mortenson, 1997). It has been argued that treatment fidelity depends on teachers' knowledge and teachers' skills, how complex the intervention and how long it takes to implement, the materials required, the number of personnel involved, the perceived and actual effectiveness of the intervention, and the motivation of the teacher (Gresham, MacMillan, Donald, Beebe-Frankenberger, & Bocain, 2000; Lane et al., 2004; Sterling-Turner et al., 2001). Differences between schools' values and cultural ethos can also affect how well an intervention is implemented by a classroom teacher (Gersten, Vaughen, Deshler, & Schiller, 1997).

Currently there is limited empirical research addressing the relationship between perceived intervention effectiveness and intervention integrity (Gresham et al., 2000). A number of studies suggest that a teacher is more likely to implement an intervention with integrity when the teacher has participated its design (e.g. Crone, Hawken, & Bergstrom, 2007). Collaboration may mean the intervention is more theoretically and practically acceptable to the teacher and may increase the teacher's confidence that the intervention is likely to succeed in their particular classroom.

Of the studies reviewed in Chapter 2 the interventions for seven of the children were independently implemented by the teacher. For seven to ten of the studies the intervention was both designed and selected by the researcher, however the teacher still implemented the intervention successfully. It is possible that in these studies the teacher accepted the intervention because they had collaborated earlier in the functional assessment process. However, functional assessment research in which the researcher completed the entire assessment process also shows that teachers can implement the intervention successfully (e.g. Lane et al., 2007; Storey et al., 1994; Umbreit et al., 2004; Wood et al., 2007) suggesting that teacher participation is not essential for treatment integrity.

In the present study the teacher was able to implement and monitor an effective intervention for six children with writing difficulties. It is likely, however, that the children would have shown increased improvement in copying fluency had the intervention been implemented with higher intensity. Furthermore the teacher chose to keep the children on the intervention past the predetermined cut off point. In Case Experiment 3 it is unlikely that the intervention would have proceeded had the researcher not supported the teacher in its implementation. The researcher created the teaching materials, sourced the assessment material, trained the peers, monitored the

children's progress, provided feedback to the participants, and reminded the teacher to increase treatment intensity when this dropped below four days per week. In Case Experiment 1 the teacher required support from the researcher to monitor the interventions progress. The teacher also failed to implement the intervention in Case Experiment 1 with integrity, however for this intervention a lot of the difficulties were related to the intervention design. The teacher had difficulty finding time to implement the reward aspect of the intervention, and the child's parents affected whether the punishment aspect of the intervention occurred.

Teachers also require the skills and knowledge to implement the intervention. There is a need for clear guidelines and communication that is presented to teachers in way that makes sense yet, also challenges teachers' current thinking and increases their motivation for change. The more difficult an intervention is to understand, the less likely the teacher will implement the intervention as planned (Gresham et al., 2000).

In many of the studies to date it seems clear that teachers are implementing interventions because they are part of a research study. That is the teachers implement the intervention because the researcher is monitoring their progress. This is supported in a recent study that showed teachers implement an intervention with increased integrity when they receive performance feedback and negative reinforcement for non adherence to the intervention design (DiGennaro, Florence, Martens, & McIntyre, 2005). Henderson (1982) investigated the stability of behaviour management techniques taught to a small sample of New Zealand teachers. Results showed that while instruction did generalise to the classroom setting, bringing about significant changes in the teachers' behaviour and perception of their behaviour

management abilities, teacher behaviour tended to revert to baseline practices after less than one month.

Finally the teacher has to have the skills, the motivation and the ability to regularly evaluate the child's progress and discard any interventions that are ineffective. Regular monitoring also provides positive reinforcement to the teacher when they see the intervention is having the desired effect. Of the reviewed studies two teachers monitored the intervention independently and for most of the studies it was unclear who decided when to terminate the intervention. In the present study the teacher and the researcher monitored the children's progress for one intervention and the researcher monitored the children's progress for two interventions. The teacher was to decide when each child would finish the intervention. At the completion of Case Experiment 2, however, all of the children were still receiving the intervention even when they had reached a level comparable with their same aged peers.

Maintenance of Teacher Skill and Knowledge in Functional Assessment

Teachers need to acquire the new skills mentioned above and use these behaviours consistently over a long enough period of time. That is teachers need to have fluency in their new evidence-based skills if they are to continue using them after the study ends. If a skill is not developed to a level of automaticity teachers often return to previous ways of responding especially at times when the teacher is under stress. This appears to be what happened in Case Experiment 1 of the present study. One way of maintaining new teaching skills is by regular monitoring by supervisors (Rossiter, 1982).

The Nature of the Classroom Environment

Why is that without ongoing consultative support, teachers routinely fail to implement interventions as intended. This dissertation suggests that teacher's

conditions of work make it very difficult if not impossible to engage in individualised planning, recording, and teaching except for very short periods of time. In the present study the teacher cited such things as extra curricula activities, timetabling difficulties, behaviour management, and instructional teaching as affecting her ability to research and implement individual classroom programmes.

In the present study the teacher was often busy after school and chose to meet with the researcher in her lunchtimes. In Case Experiment 1, the teacher spent time meeting with the child's parents and the principal, sourcing materials, and formulating the intervention. In Case Experiment 2 the teacher read appropriate literature, analysed the data, created workbooks and self monitoring sheets, sourced copying material, sourced a group teaching table, and rearranged her classroom environment and programme to incorporate the intervention. This took a substantial amount of the teacher's time. It is likely this affected the teacher's decision to include additional extra children on the same intervention although printing fluency was not their primary learning need. The time and effort spent to organise the intervention may also have affected the teacher's decision to continue to implement the intervention once the children had reached satisfactory fluency levels. In Case Experiment 3 the teacher failed to implement the third intervention with integrity even though she selected the intervention because it was shown to be effective in the literature.

Clearly teachers face two problems. First, they don't always have the knowledge or skills to individualise programmes independently. Second individualised intervention and monitoring in the classroom is very difficulty to achieve in the classroom context.

Possible Solutions

Improving Teacher Education

New Zealand teacher education programmes include study of both the theory and practice of effective assessment and teaching. Undergraduate study incorporates a wide range of topics including how to assess children's learning, how to plan effective classroom lessons, how to create resources, and how to manage a large group of children.

The research reported here indicates that this training is not sufficient. To meet the needs of the teacher in this study and previous studies (e.g. McCallum, 2007; Patterson, 2008) teacher education would need to include training which enabled them to become more knowledgeable about functional assessment and evidenced based practice (Fox & Conroy, 2000; Quin, 2000). Several authors have suggested that it is difficult to decide which functional assessment skills and which intervention skills to include in teacher education programmes, because the amount of research involving typically developing children in general education classrooms is still fairly limited, and also that the functional assessment skills described in the research can both vary greatly and be poorly defined (Conroy, Clarke, Fox, & Gable, 2000; Stichter, Shellady, Sealander, & Eigenberger, 2000). The solution suggested here is to treat this as a practical question, which could be answered by asking teachers which children they are having difficulty in teaching and then training teachers in the skills required to meet the needs of these children.

Simplifying Procedures

It is sometimes argued that if research based procedures were simplified they would be more likely to be implemented by teachers. There are two problems with respect to this solution. The first is that even the simplest procedures, where they

involve individualisation, are procedures which teachers find difficult to implement. In the present study the teacher was provided with written guidelines, and a summary of the assessment data that mirrored the decision making process, for completing a functional assessment of learning. Other examples of simplified functional assessment procedures for teachers in the mainstream also demonstrated that the teacher could implement a functional assessment and relevant intervention with practical support (Maag & Larson, 2004; Packenham et al., 2004). It would be interesting however to see if the teachers continued to so for additional children at follow-up, without support and without being monitored as part of a research study.

The second problem is that when an effective procedure is "simplified" these changes often render the procedure ineffective. For example in one study teachers provided smiley face magnets non-contingent on behaviour because it was easier to hand them out all at one time at the end of the session (McCallum, 2007). Because the smiley face magnets were no longer contingent on good behaviour, they were no longer effective.

Providing Written Guidelines

A third solution that is implemented from time to time is the provision of guidelines, tips for teachers, and simple 'what-to-do manuals'. These can challenge teachers' current thinking and increases their motivation for change. However they often fail to explain why some procedures work and some don't and why some procedures work in some situations and not others. That is written guidelines do not instruct teachers to a point where they are able to problem solve independently. A second problem is that when teachers pick an intervention off a menu of possibilities and it is the wrong one and it doesn't work they are unlikely to use it again. Finally

teachers still require the motivation and the time to read the manual and implement the intervention with integrity (Gresham et al., 2000).

Increasing Teacher Motivation

There are three sources of teacher motivation. First, extrinsic reward can be provided in the form of increased pay for results, or good work can be formally acknowledged. Second, teachers can be monitored to see if they are implementing functional assessments effectively (e.g. Codding, Livanis, Pace, & Vaca, 2008; DiGennaro et al., 2005). This raises the question of who will actually perform this role. Furthermore, monitoring can work but it only seems to work to maintain performance while the monitoring continues (Rossiter, 1982; Witt et al., 1997). Third, the recognition that the child is showing improvement can provide motivation for the teacher to continue the procedure and to use the procedure again in the future. This is a wide spread belief but it does not always happen in practice (e.g. Gilbertson, Witt, Singletary, & VanDerHeyden, 2007). The teacher in the present study completed a successful functional assessment and intervention for a child with behaviour difficulties in her classroom as part of her post-graduate study a year previously. However, in Case Experiment 1 the teacher did not form a function based hypothesis and subsequent intervention despite the previous success.

Increasing Personal Support

The question remains of what types of support to give and who should provide the support? Currently the New Zealand government provides funding for children with behavioural and learning difficulties. These include Resource Teachers of Learning and Behaviour (RTLB) and Ministry of Education staff such as early intervention staff, support teachers, psychologists, and speech language therapists. However not all support staff have been trained in functional assessment or the design

of effective interventions. This situation is changing. For example functional assessment is being taught to educational psychologists and other GSE staff using a New Zealand programme developed at the University of Victoria. This training now needs to be extended down to support staff such as RTLB.

The other main source of support is teacher aides. Teacher aides receive less training than teachers; it is therefore unlikely that teacher aides will have superior skills and knowledge when compared to classroom teachers.

Teacher Collaboration

Groups of teachers working together to support each other to design individualised programmes have also been trialled. Most of these have been unsuccessful because although teams provide support with time management teachers continue to have difficulty with many of the key areas of the functional assessment procedure (Scott, Liaupsin et al., 2005; Scott, McIntyre et al., 2005; Van Acker et al., 2005). There continues to be a lack of knowledge and a lack of functional assessment skill that has been built to fluency. These results are consistent whether or not members of the team have received previous training and experience implementing functional assessments. Knowledge of the procedure is insufficient. Unless teachers receive systematic instruction and an opportunity to practice with constructive feedback the skills and strategies required cannot be built to fluency.

However there is one example where school wide collaborative teams have worked and this is the Effective Behaviour Support (EBS) programme described by Colvin and collegues (Colvin, Kameenui, & Sugai, 1993). The EBS programme is a research based attempt to address the failure of school-wide discipline plans to provide sufficient staff development in behaviour management prior to the introduction of the plan and their failure to provide clearly defined and workable

procedures for teaching and rewarding desired student behaviour. The essential feature of the EBS curriculum is that teachers are trained to treat repeating behavioural problems as learning deficits. Teachers develop a teaching objective and provide explanations and demonstrations of desirable behaviour, practice opportunities, feedback, monitoring, and reinforcement for improvement.

Peer Tutoring

Peer tutoring is where one child provides a learning experience for a second child under adult supervision. Other terms commonly used include peer-mediated instruction, peer-assisted learning strategies (PALS), buddying programmes, and peer support. The use of peer tutoring has recently been extended to children with learning or behavioural difficulties, particularly as a tool to help children to practice previously taught knowledge or skills to fluency (Mitchell, 2008). Effective peer tutoring requires considerable input by the teacher, and has to be both carefully planned and sensitively monitored (Mitchell, 2008). In two separate meta-analyses the strategy has shown effect sizes ranging from 0.36 to 0.56 (Elbaum, Vaughn, Hughes, Moody, & Schumm, 2000; Mathes & Fuchs, 1994). In the Mathes and Fuchs meta-analysis peer tutoring was no more effective than teacher led interventions such as small group instruction, one-to-one teaching, or direct instruction.

There are a number of problems with this approach which include; the tutee developing increasing dependence on the tutor, the tutees own development becoming limited due to excessive use of the approach, ensuring the tutors and tutees are socially ready for the role, and finally recognition that peer tutoring cannot replace good teaching (Mitchell, 2008). As demonstrated in Case Experiment 3 teachers still need the skills and the time to create resources that are easy for the children to use with integrity, monitor the children's progress, and provide feedback to the children

on their progress to encourage learning and motivation. In the study by Patterson (2008) a peer tutoring intervention provided little improvement until it was taken over by the researcher.

Conclusions

This is the third of three studies of what happens when teachers know what to do but the task involves individualised programming in a busy classroom. These three studies together with the studies reviewed in Chapter 2 make it clear that a number of practical difficulties stand in the way of individualising teaching in the mainstream classroom. It is these practical difficulties which explain why even well researched interventions are only occasionally being used by classroom teachers to meet the learning needs of individual children with special learning needs.

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APPENDIX 1

University of Canterbury Human Ethics Committee Approval

HEC Ref: 2007/102

18 March 2010

Ms Stacey Timmins
School of Educational Studies & Human Development
UNIVERSITY OF CANTERBURY

Dear Stacey

The Human Ethics Committee advises that your research proposal "Meeting the learning needs of individual children in the mainstream classroom" has been considered.

Thank you for your replies to points 1, 3 4 and 5 raised by the Committee which we accept. Regarding the second point i.e. following the initial assessment being made parents and caregivers of the child selected for the detailed section of the project should consent to the specifics of the project, while the Committee understand your argument in this regard, we recommend that you as a researcher send the necessary information to the parents. This is to ensure that they are clear that this stage of the project is associated with your University research project and has University of Canterbury Human Ethics clearance.

I am pleased to advise that your proposal has been approved with the above in mind and subject to the incorporation of the amendments you have provided in your email of 15 August 2007.

Yours sincerely

Dr Michael Grimshaw
Chair, Human Ethics Committee

APPENDIX 2

Example of Standard Copying Task

One

Six happy mice walked to the zoo to see the giraffe. They quickly jumped onto the bars to get a better view. Suddenly the giraffe bent towards the mice. The mice got such a fright they ran all the way home.

Two

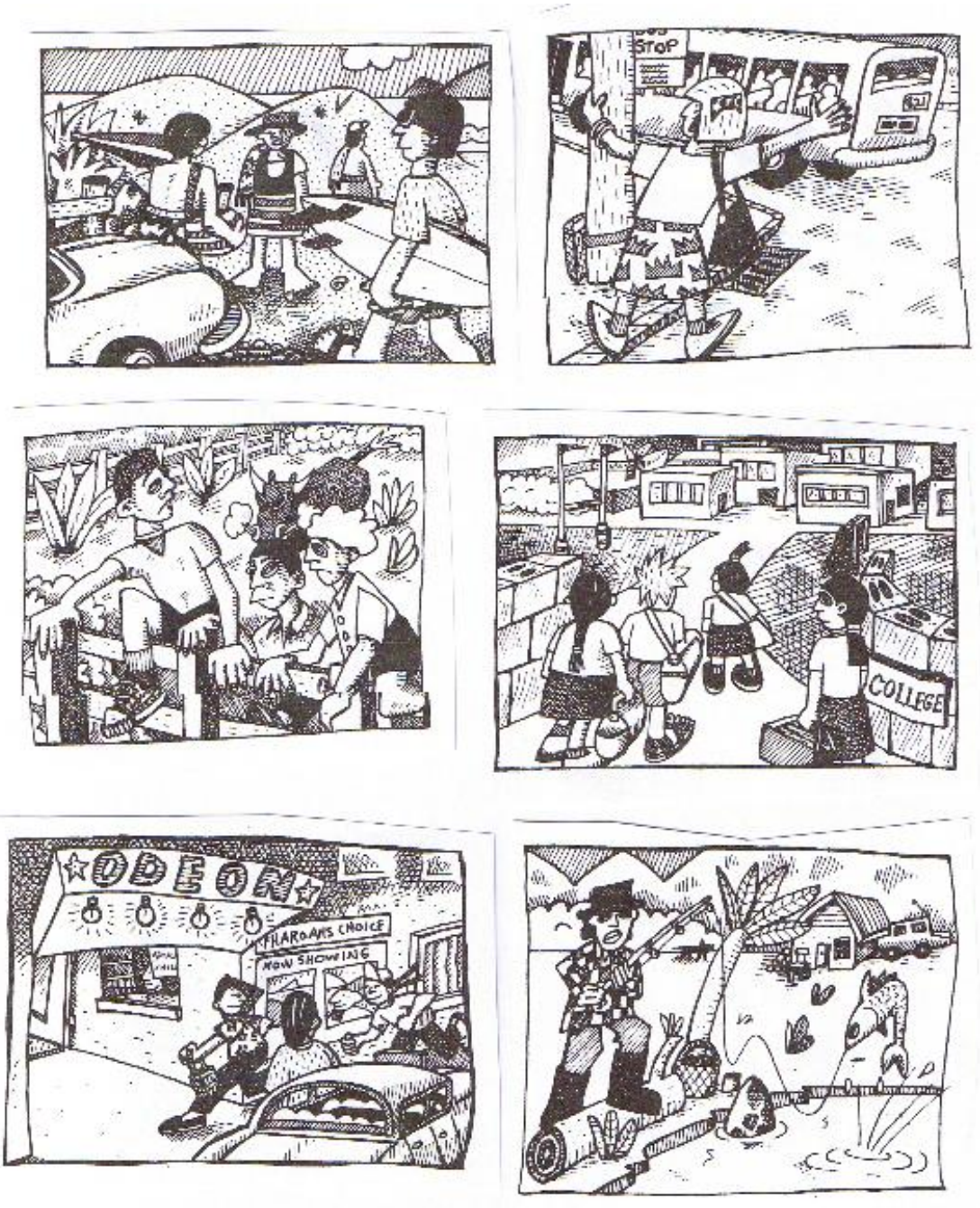
Fox and zebra went to pick plums. They put them in a large box, then carried the heavy box home quickly to make jam. Yum!

Three

It was snowing. Felix zipped up his green jacket and bravely stepped outside the warm house. A large quantity of snow had fallen on the path. Felix picked up the spade and began to shovel the snow.

APPENDIX 3

Example of Story Starters



APPENDIX 4

Williams Phonemic Segmentation Test

(Adapted from the QUIL TEST)

Date: _____ Tester: _____ Participant: _____

I'm going to say some words and you will have to listen carefully. You are going say the sounds in the words and I want you to use your fingers to help you. In the word *it* there are two sounds - */i/* and */t/.*

The tester demonstrates two sounds by saying "it" and then putting down her small finger and saying "/i/" and ring finger and saying "/t/".

Now we are going to do some practice items. Some of the words are made up words and some are real words. Say the word first. Then say the sounds.

The tester gives feedback and if necessary further practice on the practice items.

fom? (3) baby? (4) **knife**? (3) stelp? (5) sledge? (4)

Say the word first. Then say the sounds.

Stimuli	Response	Sounds	Sounds	Word Score	
1. big	/b/ /i/ /g/	3		1	0
2. oskad	/o/ /s/ /k/ /a/ /d/	5		1	0
3. itch	/i/ /tch/	2		1	0
4. frog	/f/ /r/ /o/ /g/	4		1	0
5. lek	/l/ /e/ /k/	3		1	0
6. strebe	**/s/ /t/ /r/ /e/ /be/**	**5**		**1**	**0**
7. on	/o/ /n/	2		1	0
8. plate	/p/ /l/ /a/ /te/	4		1	0
9. yut	**/y/ /u/ /t/**	**3**		**1**	**0**
10. vist	/v/ /i/ /s/ /t/	4		1	0
11. dancer	/d/ /a/ /n/ /c/ /er/	5		1	0
12. og	/o/ /g/	2		1	0
13. zokt	**/z/ /o/ /k/ /t/**	**4**		**1**	**0**
14. white	/wh/ /i/ /te/	3		1	0
15. stamp	/s/ /t/ /a/ /m/ /p/	5		1	0
16. absence	**/a/ /b/ /s/ /e/ /n/ /ce/**	**6**		**1**	**0**
	Raw Scores		/60		

Words added to QUIL in bold.

Table constructed by Deborah Williams and Karen Bradley.

APPENDIX 5

Canterbury Decoding Fluency Test

Date: _____ Tester: _____ Participant: __ _____

Graphemes : _____ Errors: _____ Correct Graphemes per Minute: _

pa	in	to	eat	ka	
on	far	shoo	er	do	10
oil	bee	hay	lee	so	
ed	the	vee	oat	jar	20
eel	no	at	we	urn	
quit	aim	me	oo	go	30
or	zoo	boy	why	irk	
coo	cha	owl	ha	art	40
ra	up	ox	out	you	
shoo	eat	eel	bee	pa	50
to	in	hay	jar	urn	
the	aim	ka	boy	do	60
oo	me	er	go	cha	
vee	out	coo	owl	far	70
at	up	irk	ha	oil	
lee	oat	zoo	ra	or	80
we	quit	so	ed	why	
on	art	ox	no	you	90

APPENDIX 6

Teachers Weekly Reflection Sheet

Meeting the learning needs of individual children in the mainstream classroom

Date: _____

Teacher: _____

Child: _____

Weekly Reflection

Please complete the following questions for each of the participating children in your classroom at the end of each week, with regard to their current individualised education programmes.

1. Has the introduction of (child's name)'s individualised education programme involved you in any extra work? If yes please describe.

_____

_____

_____

2. Have you received any assistance or support in implementing (child's name)'s individualised education programme? If yes, please describe.

_____

_____

_____

3. Please list any additional support that would assist you to implement individualised part of this child's current classroom programme.

_____

_____

_____

APPENDIX 7

Functional Assessment Summary and Planning Sheet for Writing

PART A: DATA SUMMARY

Printing:

A. Printing quality _____

B. Printing fluency _____

Writing:

A. Writing quality

- Punctuation _____
- Content _____

B. Spelling _____

C. *Writing Fluency* _____

PART B: OPTIONS

Rank:

PART C: DECISION

PART D: INTERVENTION

Who: Where: Begin: Frequency:

APPENDIX 8

Functional Assessment Summary and Planning Sheet for Reading

PART A: DATA SUMMARY

Letter Recognition Phonics Training Assessment: _____%
Phoneme Recognition Phonemic Segmentation Test: _____ of 60 correct =

Decoding Fluency Canterbury Decoding Fluency: _____ graphemes per minute
Running Record:
Fluency _____ correct words per minute
Accuracy _____ % at _____ year-old level
Comprehension _____

PART B: OPTIONS

Rank:

PART C: DECISION

PART D: INTERVENTION

Who: Where: Begin: Frequency:

APPENDIX 9

List of The 60 Practice Words

Practice List A1	**Practice List A2**	**Practice List B1**	**Practice List B2**
fly	boil	her	coin
nice	teeth	tune	video
kick	shoot	rain	queen
chase	sharp	dark	porch
wait	say	cuff	boot
cute	girl	loan	town
yes	term	then	loud
run	road	way	that
van	down	feet	Roy
Ken	mouth	zip	church
quiz	short	cake	zoom
prize	cheap	get	shirt
not	hurt	size	job
chain	weed	wide	year
box	joy	six	my

Appendix 10

Child's Practice Diary

Today is:	Racetracks 7 minutes	"Snap!" 7 minutes	Flashcards 7 minutes	Decoding Fluency Scores
	signature	signature	signature	
Monday / /08				
Tuesday / /08				
Wednesday / /08				
Thursday / /08				
Friday / /08				

Decoding Fluency Progress